

# THE IRON AGE

THURSDAY, OCTOBER 1, 1891.

## TIN-PLATE MACHINERY.

### DOUBLING SHEAR.

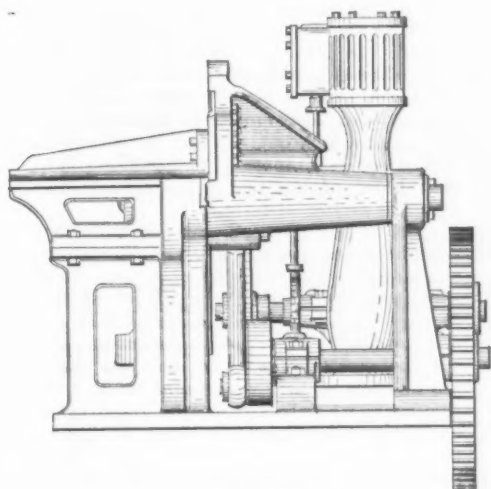
Among the first to turn their attention to the making of tin-plate machinery, which is now receiving marked attention from manufacturers, were the Leechburg Foundry and Machine Company of Pittsburgh. This firm are now building all the machinery needed for making tin plate, from the raw material to the finished product. The accompanying drawings show the front and side elevations of a doubling shear, for which they have received orders and one of which will soon be shipped to the new tin-plate plant of Wallace Banfield & Co. of Irondale, Ohio. This shear, including the vertical engine and connections, occupies a floor space of only  $4\frac{1}{2} \times 8\frac{1}{2}$  feet. The principal advantage in

A temporary organization was effected, with F. R. Persons as president and F. H. Shelton as secretary. The object of the club is to promote closer social relations, and to open and maintain handsome permanent club rooms in Chicago. Committees appointed were: On selection of permanent officers, George Yuille, F. H. Shelton, F. R. Person, W. W. Fitz, F. B. Howard; on entertainment, H. D. Harper, F. D. Moses, E. E. Morell, J. Stout, D. Felt. They adjourned subject to the call of the president.

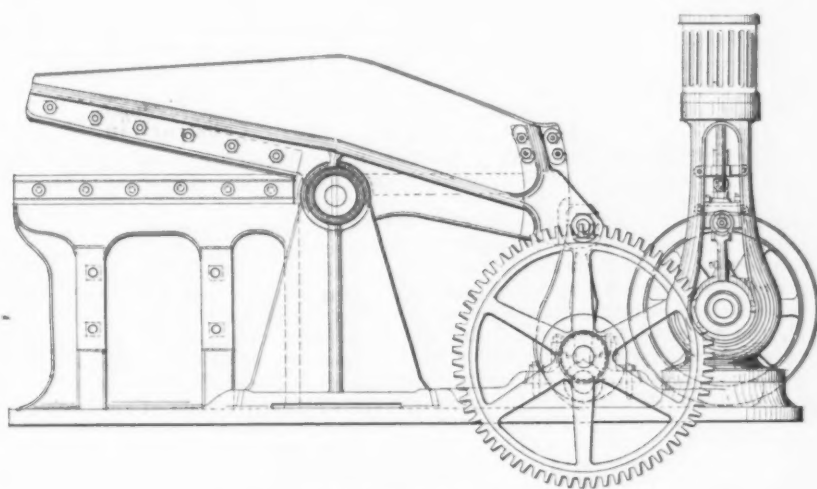
### Freight Rates on Merchant Marine Material.

At the last meeting of the Transcontinental Association a resolution was offered to the effect that the Northern Pacific be permitted to put in a rate of 80 cents per 100 pounds from Pittsburgh to Tacoma

or steel not intended for the construction of merchant marine vessels, and with the further understanding and condition that if it is at any time found that the continuance of the rate herein authorized will seriously endanger the rates established for the transportation of such other iron or steel, or will be likely to result in a reduction thereof, then the special rate above referred to shall be immediately canceled. In the opinion of the commissioners it is desirable to limit the application of said special rate as far as possible, and they would therefore stipulate the following limitations—*i. e.*, the rate shall only apply upon the articles above named to be used in the construction of merchant marine vessels at Tacoma, when shipped in carload lots of not less than 20,000 pounds each, from Pittsburgh and points common therewith to Tacoma. In case it should be desired to make such shipment from any point other than Pitts-



End Elevation.



Side Elevation.

### TIN-PLATE MACHINERY.—DOUBLING SHEAR.

the design of this shear is found in the fact that the power and connections are all above the foundation, and that there is a fixed table. The table extends from the point of the knife blades to the outside of the doubling arm and is placed on the top side and is 28 inches wide. It rests on four ribs, which are cast to the main body of the shears, as shown in the front elevation. These ribs also prevent the bottom knife holder from springing when the shear is cutting. The doubling arm is placed on the under side and is bolted to the lever. This arm has a stroke of 6 inches, and by having slotted holes where bolted to the shear lever can be set to come within any distance of the table when down to the full length of stroke. By having a fixed table and rigid arm moving to within a set distance of the table, a sheet can be doubled with one stroke, where many strokes were often required to double a sheet perfectly flat. The shear blades for cutting the double off, which also can be used for trimming, are 36 inches long and are made of the best crucible steel.

The Chicago Gas Club was organized last week with a list of 60 members. There were present at the initial meeting, besides a large Chicago representation, gas men from Rockford, Elgin, Macomb, Milwaukee, South Chicago and Valparaiso.

upon plates, beams, angle bars, Z bars, T deck beams and steel rods to be used in the construction of merchant marine vessels at Tacoma, Wash. A disagreement arising, the matter was referred to the commissioners of the Western Traffic Association, and has been heard by them. Since the hearing the only member then opposing the establishment of the rates has withdrawn his objections, provided the Northern Pacific would agree to cancel the same if found to be applied to other material, or if likely to involve similar reduced rates to other Pacific Coast terminals. The commissioners find as follows:

As it appears that all members of the Transcontinental Association have now withdrawn their opposition to the proposed action of the Northern Pacific, the commissioners do not feel warranted in refusing to permit the proposition to be given a trial, and they therefore assent to the putting in force by the Northern Pacific Railroad Company of a through rate of 80 cents per 100 pounds for transportation from Pittsburgh and points common therewith to Tacoma on plates, beams, angle bars, Z bars, T deck beams and steel rods to be used in the construction of merchant marine vessels at Tacoma. This with the understanding and upon the condition that such permission shall not be so used as to affect the published rates of the association for transportation of any iron

burgh, and points common therewith, or to any other point than Tacoma, the commissioners will be prepared to give the matter further consideration. And in case the rate is found to be applied on other material, or is likely to involve similar reduced rates to other Pacific Coast terminals, the tariff thus authorized shall be forthwith withdrawn.

A press dispatch from Marion, Ind., says: "A stock company has been organized here for the manufacture of heavy siege guns by a process invented by Dr. Richard J. Gatling, inventor of the wonderful machine gun known and used throughout the world. Work on the buildings for the plant is to begin immediately upon the inventor's arrival from the East, and the new process is so cheap and so rapid that Dr. Gatling expects to have the first gun ready for a test in four months from now. He declares there is absolutely no question as to the success of his invention. The new gun, he says, will be infinitely stronger and more durable than any now in use. The capital stock of the company is \$1,000,000, all of which has been guaranteed."

New Haven's exports last year were valued at \$1,600,000, which is an increase over the previous year. Domestic shipments amounted to \$109,296,000.

# SAFES.

## BURGLAR AND FIRE PROOF.

The manufacture of safes in the United States has become an industry of far greater magnitude than is generally supposed, or than would appear possible, considering the small amount of wear and tear, and the consequent long life of a safe. Comparing the aggregate daily output with the possible number of users, it would seem that the entire country could be supplied in five or six years, to say nothing of those already in use; and yet the rate of production is constantly on the increase—quite as much so, apparently, as the manufacture of other lines of goods of a more perishable character.

### The Prerequisites of a Fire-Proof Safe

are briefly as follows: Proper thickness of walls and doors. This has been found, by actual experience, to give best results at 6 inches. If less—except in the very smallest sizes—it will be insufficient to resist long continued exposure to the high temperature to which it may be subjected. If more, the extra weight does not add proportionately to the strength, and may occasion the destruction of safe and contents by causing it to go to pieces if, while hot, it should be subjected to a fall from an upper floor to the ground in basement or cellar. In special cases, however, the above standard of 6 inches may be modified to advantage. For instance, very large safes, for jewelers' or private bankers' use, are frequently set on masonry piers, built from the cellar floor to level of floor on which the safe is to be used. As this prevents the possibility of a fall in case of fire, the walls of safe may be and frequently are made much thicker, which, of course, increases proportionately the amount of heat and duration of exposure which they can successfully withstand.

### Material.

The material and method of construction of the outer shell of the body and doors should be such as to afford a maximum of strength, with minimum of weight and thickness. Of weight, for the reason given above. Of thickness, because the conductivity of the metal, if too thick, is not sufficient to impart the heat to the material composing the filling with sufficient rapidity to prevent burning or fusion of the outer surface exposed to the flame, while the inner surface is at a much lower temperature. And the fusion, once established, will continue (and may lay bare the filling) even after it has reduced the thickness of metal to what, if it had not been exceeded, would have enabled the conduction of heat into the filling with the same rapidity with which it was absorbed, or, at least, sufficiently to prevent the fusion temperature from being reached at all. Of course the burning away of any considerable portion of the outer shell would be of probably fatal effect, as the filling, having no strength in itself, if exposed to direct action of the flame, would rapidly disintegrate and fall away, thus exposing the light inner shell and wooden cabinet work, which having no fire-proof qualities independently of the filling, would admit of a speedy destruction of the contents of the safe. The material used in the construction of all parts exposed to the direct action of the flame should be a good quality of wrought iron or steel. As a suitable grade of the latter can be bought almost, if not quite, as cheaply as wrought iron, it should have the preference. Being almost as low in carbon as the iron, it is very nearly as refractory, and no more liable to fracture while hot. From its homogeneity, its con-

ductivity is greater than that of iron, and consequently the liability to burning is less. From the extreme brittleness of cast iron when heated, and the fact that they project a considerable distance from surface of the doors and are therefore very much exposed, the hinges should not be made of this material, although this defect is noticeable in many otherwise first-class safes. Malleable iron or cast steel are the most suitable materials for all external hinges.

Far more depends on their remaining intact than would appear from the claims of salesmen. The lugs, or in some makes the tongue and groove, on the back edge of doors are claimed to hold the latter in position when shut independently of the hinges. But as a matter of fact the difficulty of accurate fitting is such that there is almost invariably sufficient play to admit of considerable space between the flanges of doors and jambs, if the hinges were removed or broken. The result of this would be the admission of superheated vapor and air to such an extent that the contents of the safe might be damaged or destroyed, when the amount of heat absorbed through the walls would be insufficient to do any damage whatever to the contents. This matter of hinges serves to illustrate the fact that many apparently trivial features in safe construction are really of the most vital importance as regards their efficiency.

### Construction.

Some general features of construction have come to be adopted by many of the leading makers, and may be described as the best practice in the present "state of the art." The outer frames, front and back, should be made of steel or wrought iron square-root angles, of best quality of material. They should be bent and solidly welded into continuous hoops, having rounded corners of an internal radius of about 2 inches. The shell should be of a single sheet of good quality of tank iron or steel, bent at corners to same radius externally, and having the ends of sheet meeting in the middle of bottom of shell. For safes too large to admit of the use of a single sheet there should be one forming the top and one-half of each of the ends, and the other forming bottom and other half of ends. The thickness of metal should be from No. 8 English gauge for the largest sizes to No. 16 in the smallest. Panel bars of same material and thickness as the angle frames should be riveted to the body sheet, extending and fitting tightly between the angles from front to back. The width of these bars depends on the number used. When there is but one on each of the five sides (top, bottom, back and ends) they should be from 12 inches for the largest to 2 inches for the smallest. The bottom bar should cover joint of body sheet, when but one is used, and the end ones when composed of two sheets. The body sheets should be firmly riveted to the angle frames and panel bars, the rivets being of best quality, and closely spaced to prevent buckling and tearing loose of the sheets when hot. The doorway jamb also the door frame castings should be made as thin as possible to give good sound castings, and none but the best quality No. 1 foundry iron of mixture to give proper fluidity to run sharp and true to mold should be used. The jambs and door frames should have not less than five steps, or, as they are technically called, "flanges," which should be closely fitted, to leave as little space as possible for the entrance of heated air or steam when doors are closed. The jamb casting to be firmly fastened to front angle frame by means of good, tough tap screws (annealed after threading), closely spaced and not less than  $\frac{3}{8}$ -inch diameter for all except smaller sizes of safes. The wheel brackets are fastened to the angle frames and to a

"washer" or short bar placed inside of body sheet by means of square headed tap bolts, also annealed after threading. The wheels should be of broad tread and large diameter, as they enable the moving of safe easily and do not sink into the floor. The outer door plates should invariably be made in one piece of  $\frac{3}{8}$  to  $\frac{1}{2}$  inch thickness, according to size of safe. They should be very carefully riveted to door casting, the spacing of rivets being not over 3 inches between centers. Insecure fastening of these plates may cause destruction of the door and contents of safe, as there is great tendency to warping of the plate when heated, and from the construction of the door, with its cavities for locks and bolt work it will more readily than any other portion of the safe admit of the passage of hot air should the plates tear loose.

The bolt work and locks should invariably be placed on the inner face of the door and thoroughly protected by the filling, the only communication with the external surface being the necessary spindles for combination lock and bolt work, and these should be close fitting and of small diameter to prevent conduction of heat to the interior. The bolts should be close fitting, and strong enough to stand the shock of the safe's falling, as before mentioned. In all except the smallest sizes there should be vertical as well as horizontal bolts, and all should move in unison and without lost motion or there will be danger of a lock out. All of the standard makes of combination locks are good, the choice of any particular make being purely a matter of taste.

One of the simplest and yet most important of the features of a reliable safe is the means for excluding the hot air. That something more than the closeness of the fitting of door and jamb castings is necessary to render this point absolutely safe may be positively asserted, and yet there are but few makers who seem to view it as a necessity. In all burglar-proof safes and vault doors there is a strip of heavy red wool felt glued into one or more of the grooves in the jamb and upon which the corresponding tongue of the door is forced by means of the pressure bars. The object in this case is to prevent the introduction of liquid or powdered explosives, but there is no reason why the same device applied to the doors of fire-proof safes will not be equally effective in preventing the passage of hot air and steam. Of course a pressure bar on front edge of door is necessary, but a very simple and inexpensive form will answer.

### Material and Method of Fire Proofing.

The last, and probably the most important, point to consider is the materials and methods used for fire proofing. The requisite qualities are a low degree of conductivity of heat and the greatest amount of strength in proportion to the weight. Pure hydraulic cement concrete was one of the first materials used for this purpose, and by reason of the "survival of the fittest" it is more generally used to-day than any other, though many different substances have been tried with results varying from good to very bad.

### Design of Burglar-Proof Safes.

In burglar-proof work the selection is more difficult, for the reason that the opportunity is so readily afforded the maker to conceal dishonest work in the shape of inferior material and cheap and inefficient construction. The only safe method of ordering is on a carefully written contract embodying a fully detailed specification of the essential requirements as to material and mode of construction, and a personal supervision of the work in all stages of its progress.



In designing a safe which shall best resist the tools and methods of the expert cracksman it is necessary to consider what these methods may be. Of course they can only be here alluded to in a general way, as they are too numerous to mention in detail. If not already posted, the burglar commences his preparations by making a careful study of the construction of the particular safe upon which he is to operate, or, if this is not possible, of the standard work of the maker. By this means he is enabled to ascertain the weakest points, and determines his plan of operations accordingly. He will decide on one of four methods. First, to endeavor by means of wedges, levers, screws, &c., to rip off the plates forming the door or walls, one after another, and thus obtain access to the interior by main strength. Second, to drill through the door at a point which will

ingenuity and skill on the part of the burglar will enable him to open in the possible time at his disposal, and as the purchaser's object in buying a burglar-proof safe is to have one that is really such, he must depend exclusively on his own care or on that of a competent representative as to the securing of one which shall have the necessary qualities.

#### Materials in Burglar-Proof Safe.

First, as to materials, the qualities absolutely essential are the greatest possible degree of hardness, whereby to resist the action of drills and other cutting tools, and the necessary strength and toughness, to prevent its being broken by violence through the use of tools or explosives. For steel safes the material almost universally used to resist drilling or cutting is what is known as "five-ply" metal. This

quality is supplied by the iron or soft steel courses. While safe makers, and users as well, have their different ideas and preferences as to the kind of steel best adapted to burglar-proof work, it is safe to say that, so far as present knowledge and experience goes, there is no better material than carbon tool steel, made of good quality of stock and of proper percentage of carbon. Most makers of five-ply metal will use, if ordered, other alloys, such as tungsten, chromium, &c., but always in addition to the carbon and not in place of it, whatever may be the claims to the contrary. But while there are unquestionably certain additions to carbon steel which will impart to it other qualities than mere hardness—great strength, for instance—the former quality, as required in safe material, as obtained from carbon alone, is equal to that from the use of any other known element. This fact has been so often proven, and is so well known to steel makers, that it cannot be considered a matter of argument. The only objection to the use of other kinds of steel is that it costs more, and consequently either the purchaser or manufacturer (generally the former) pays a higher price, without a corresponding gain in quality of the finished goods.

#### Construction of Walls and Doors.

According to the best practice, the construction of the walls and doors should be as follows for a medium-sized safe, very large or small ones, of course, being modified to suit circumstances. As the accompanying cut can be clearly followed, letters of reference are omitted as unnecessary: The frames should be made from five-ply square-root angle bars 1 inch thick and from 3½ to 6 inches in width, according to size of safe. After being carefully straightened the edges of the bars should be planed true and square, and a rebate ½ x ½ inch cut on the inner face of each edge. The bar is then mitered, bent and welded to form a continuous hoop, but unlike that for a fire-proof safe, the corners are square. One of these hoops forms the front and another the back frame, while the space between, at each of the four corners, is filled by transverse angles, cut from same bar and rebated same as hoops. This forms the skeleton of safe. The outer course of top, bottom, back and ends should be made each of a single plate, if the size admits. These plates should be of 1 inch five-ply metal, and should be planed true and rebated on the front face of all four edges, so as to engage and come flush with the outer face of the frame angles. It is of the utmost importance, and should be a matter of special attention of the superintendent, to see that these plates fit tightly into their places, and that the joints are close and true, for if otherwise it presents a starting point for those innocent looking but powerful little steel wedges of the burglar, and mischief may come of it.

The second course of plates of ½ inch five-ply (same relative thicknesses of steel and iron as in the 1-inch plates) is next fitted into place, setting closely into the corners of the angles. Owing to the unevenness of the surface of angles and plates, the edges of all internal plates, where coming against them, are fitted by grinding on the emery wheel, instead of planing. The method of fastening each successive course of plates to the one next preceding it is shown in the cut. The countersink head screws used are ¼ inch diameter, 14 threads per inch, and are made of seven-ply bars of same material as the plates and angles, the bars being twisted during the rolling so as to present the hard steel in spiral form. The holes in the outer course of 1-inch plates should not be drilled deeper than to the outer layer of steel, and should be bottom tapped to give the greatest possible effective hold to the screw. The

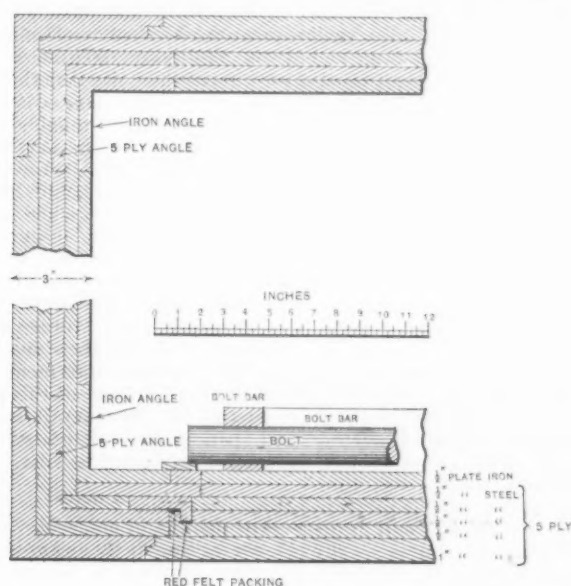


Fig. 1.—Section, Showing Arrangement of Plates.

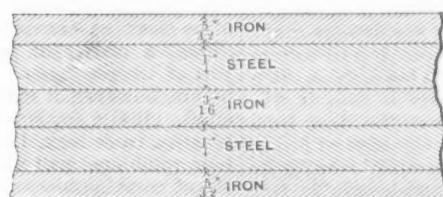


Fig. 2.—Section of 1-Inch Five-Ply Plate.—Full Size.

#### FIRE PROOF AND BURGLAR PROOF SAFES.

enable him to raise the lock dog and throw the bolts. Third, by drilling, to introduce explosives by means of which the door can be blown open—or, at least, so started as to render the opening simply a matter of sufficient force. Fourth, the introduction of liquid or pulverized explosives into the space between the edges of door and jamb, by means of which the outer plate will be sufficiently started to enable the insertion of wedges and levers to tear off the plates piecemeal.

No safe maker will claim for his work that it is absolutely impregnable, given unlimited time and facilities to effect its forcible opening. But time is the essential element. A safe, for instance, which can for 48 hours successfully resist the means employed or possible under the circumstances may for all practical purposes be considered impregnable, even though an extension of the time for a few hours longer would result in its being opened. A safe can be made which no amount of

is now made by several mills exclusively for the use of safe makers. It is composed of five plates of alternate iron and steel, firmly welded in rolling, so as to form a practically homogeneous plate or angle. The proper construction of section should be as nearly as possible the following: ⅜-inch iron, ¼-inch steel, ⅜-inch iron, ¼-inch steel and ⅜-inch iron. The quality of iron used should be of the best, to insure perfect welds and great toughness. Within a year or two soft steel has been successfully used in place of iron and gives excellent results. If of proper quality it is better than iron, as its homogeneity renders it better suited to the necessary manipulations of manufacture, and gives greater soundness and consequent strength, after tempering and straightening. The quality of hard steel used in the two intermediate courses should be such as will give the greatest possible degree of hardness, irrespective of strength to resist breakage, which latter

tapped holes in the  $\frac{1}{4}$ -inch plates may be punched and machine tapped, as the outer plate protects the screw points. The proper thickness for the walls is 3 inches, and all plates, except the outer course, should be  $\frac{1}{2}$  inch—all, except the last or inner one, to be of five-ply metal; the latter may be of iron or soft steel. It will be noticed that the cut, Fig. 1, shows an angle fitted in the corners in second course of  $\frac{1}{4}$ -inch plates; also in the inner course. These should be made from the same material as the plates of the course in which they occur. They should be firmly screwed to preceding course, as the object in using them is to tie the construction more securely than would be possible were the plates alone used. The spacing of screws in all courses should be made as symmetrical as possible, and should not exceed in any direction 6 inches from center to center—the location for each succeeding course being as nearly as possible in center of spaces in preceding one; but care must be taken that no two screws shall come in line in the thickness of walls or doors.

#### Door and Jambs.

The construction of door and jambs is so clearly shown in cut, Fig. 1, as to render description unnecessary. The thickness is  $3\frac{1}{2}$  inches, the inner course only being of iron or soft steel. The tongues and grooves in both faces are formed by L bars of five-ply metal, or should be, though this is one of the points in which inferior material in the shape of iron or soft steel is likely to be used. If such were the case it would necessitate the drilling of but one  $\frac{1}{4}$ -inch plate of hard metal after penetrating the outer 1-inch plate, as the thickness of the L bars at the point where they interlock is  $1\frac{1}{4}$  inches. The bottoms of grooves in both door and jamb should be packed with felt, and the fitting of edges of door plates into jambs made so close as to pinch a piece of ordinary writing paper. While such close work is difficult, except to first-class workmen, it is nevertheless possible as well as highly important, and should therefore be insisted on by the purchaser as one of the prerequisites of his specification. After the body and doors of safe have been built and all parts accurately fitted, they should be numbered carefully to indicate their respective positions, and the safe taken apart for hardening. This is a matter which requires the most careful attention of the superintendent, as upon it depends the drill-proof quality of the safe. No matter how good the quality of material may be, its value depends on whether or not it has been given the full degree of hardness of which it is capable. Before placing in the furnace for heating all screw holes, whether clear or tapped, and all surfaces which the scale formed by the oxidizing action of the heat will affect injuriously, should be protected by a thorough coating of fire clay. After charging the furnace the heat should be raised slowly, so that the plates and angles may have time to absorb it uniformly throughout their mass. They should be allowed to remain from five to ten minutes, according to thickness, after they have reached a bright red, or in case of 1-inch metal even approaching orange, in order that they may become thoroughly "soaked," when they should be carefully withdrawn and conveyed by means of suitable handling mechanism to the bath for immersion. Herein lies the most critical part of the operation, as on the skill of the manipulator depends the success or failure of the hardening. While the article must be handled very quickly to prevent loss of heat, it must also be done carefully and surely that it may be held accurately in position over the bath, and then quickly lowered edgewise, so that the immersion shall be practically instantaneous. As soon as covered by the

water it should be moved rapidly from end to end of the bath—always edgewise—and the motion continued until perfectly cold. It is then withdrawn and ready for testing, which should be by a specially hardened drill of the best quality of steel attainable, the latter used in a heavy geared drill press at a speed of not over 10 to 12 revolutions per minute. The testing should be upon all parts of the plate or angle to give average character of the hardening. If the drill shows any sign whatever of cutting the steel after penetrating the outer course of iron, the hardening must be done over, and if not successful, will necessitate the rejection of the article, as almost invariably it will be found to have altered in size after the third attempt to such an extent as to destroy the fit. With careful heating and cooling, however, it need but rarely occur that a second heat is necessary. It is absolutely essential to good work that the cooling bath (pure cold water only) shall have a rapid inflow from the bottom and overflow from top to give sufficient circulation to prevent its heating above lukewarm.

After all parts of the safe have been hardened and tested they must be straightened, as they will be found to have become more or less twisted and buckled. This is done without fear of breakage, as the hard brittle steel is thoroughly protected by the iron or soft steel courses. When straightened, the safe may be put together finally. There is always more or less fitting necessary after hardening, as the size will unavoidably alter to a slight extent. Of course this must now be done by grinding, and care must be taken that the work is not heated by the emery wheel sufficiently to draw the temper. The attention of the superintendent should be given continuously to the reassembling of the parts to see that all screws are carefully and firmly driven, so as to bring the plates solidly together, otherwise he may be sure they will not be as they should. After the reconstruction is complete all external joints should be carefully calked to prevent the possibility of starting wedges in them.

The hinges should be of malleable iron or cast steel, heavy and massive in design, and be provided with a continuous hinge bar connecting them from top to bottom in place of the single pin for each, as often used. Unless this device is used it will be impossible to prevent the door from sagging, and the proper closeness of fitting will render this inadmissible. Owing to the continuous tongue and groove in face of door and jamb flanges, it is necessary that the motion of door in opening and closing shall be, for about  $\frac{1}{4}$  inch before contact with the jamb, perfectly rectilinear, as the radial motion imparted by the hinges will not admit of its traveling the entire distance without some compensating mechanism. There are various devices used for this purpose, some of which are very efficient and others beyond expression bad! As the door should be forced tightly against the felt packing it is necessary to apply the requisite pressure equally and simultaneously at all points. This is done by means of what is termed the pressure bar, many different designs of which are used, and the efficiency of any particular make of which can readily be determined by a competent superintendent.

#### The Bolt Work

must be heavy and strong, the bolts proper of cold-rolled steel, and the bolt bars or frames through which they work (see Fig. 1) should be of mild steel of best quality. The only reliable and secure method of fastening the bolt frames to the door is by means of conical-headed bolts (made of the seven-ply twisted metal previously referred to) passing through and tightly fitted into the inner four  $\frac{1}{4}$ -inch plates and through the bolt bars, which

they hold in place by means of hexagon nuts. The bolts should be  $\frac{1}{2}$ -inch diameter for medium and larger sized safes and threaded 14 per inch. Nuts should fit tightly in the thread—that is, they should require the use of a wrench to screw them into place, as otherwise long-continued jarring on the door may start them and loosen the bolt work sufficiently to permit of wedging the door open. As there is considerable putting on and taking off of the bolt frames during the manipulations necessary in construction the workmen will always endeavor to have these nuts work loose in order to facilitate the operation, and as this applies equally to all screws and bolts throughout the entire safe it is well that special attention be given to it. The bolt mechanism should in all cases be double geared—that is, the bolts should all be thrown simultaneously toward the jamb which they are to engage, being actuated by a prime mover operated either automatically or by hand. It is absolutely essential to the proper working of the bolts that they shall be free from lost motion and act in perfect unison, otherwise the probable result will be a lock out, which, as may be supposed, is no trifling matter if the safe be a reliable one. This it could hardly be if it cannot keep out the maker as well as the burglar. One of the most important requirements in connection with bolt work is that it shall bear in close contact against the inner face of the jambs, so that when the pressure bar is turned to relieve the pressure externally there shall be no perceptible outward movement to the door. The result of neglect of this point will be to destroy the efficiency of the felt packing and permit the introduction of nitroglycerine or mealed powder.

#### Locks.

The method of actuating bolt work and of controlling it by means of locks, while of ultra importance, is one of the few in which nearly all manufacturers can submit really good devices. Of course, as it is all in plain sight on the door, and constitutes the show work of the safe, it naturally receives the most careful attention, and the selection of any particular make may be considered, within certain limits, a matter of personal taste on the part of the purchaser. A few important points, however, it may be well to bear in mind. While any standard make of combination bank lock, having not less than four tumblers, will give about 100,000,000 of combinations, and cannot therefore be opened by any one not knowing the numbers on which it is set, yet there are so many cases on record in which the cashier, or person in charge of the safe, has been compelled by force or threats to open it, that it may be considered to have in a great measure destroyed the value of an otherwise impregnable lock. The only real protection then lies in placing it beyond the power, even of the custodian of the safe, to open it except at proper time during the regular business hours. There is but one way of accomplishing this, and that is by unlocking, or controlling the unlocking, automatically. The time lock, up to the present time, seems to be the only device by which this can be accomplished, and they are daily increasing in use, notwithstanding that they are comparatively expensive. Still, as they have become more a matter of necessity than of choice when the value of contents of a safe is considerable, the matter is one which a prudent business man would consider as beyond discussion.

Time locks, though of several makes, are of two classes. One is known as the "time lock," pure and simple, the other as the "automatic time lock." The former has the function of controlling the operation of the bolt work by means of the combination lock, generally rendering the



latter inoperative until released, though in some cases it permits the setting up of the combination and engaging the lock dog, but "stumps" or blocks the bolt work, and prevents its being thrown to unlock. The automatic, as its name implies, not only controls but actuates the bolt work, and permits the opening of the door by merely working the pressure bar. Some automatics perform both functions, of locking as well as unlocking; others the latter only, the locking being accomplished by some independent device. There is still another form, by which the automatic proper—that is, considered independently of the timer—both locks and unlocks, but is controlled by the timer only in unlocking. Of the several devices named, the one having the most complete control is unquestionably most desirable, as it leaves nothing to the chance of being neglected through carelessness or forgetfulness. When the safe is required for bank use it is well to have it constructed with an inside chest, the door of which will be sufficiently protected by a combination lock. Of course the construction of door and bolt work of the chest must be equally as good as that of the safe itself, but as a burglar would naturally feel considerably discouraged, after spending the time necessary to work his way past the outer door, to find he was still on the outside of one equally formidable, he would probably pack up his kit and depart with his only booty, the glory of having mastered the main door.

The foregoing remarks apply equally to burglar-proof vault work as to safes, as their construction is similar, and the same locking devices are employed. The vault vestibule, however, has usually a pair of heavy folding doors, but little less formidable than the outer one. These are generally protected by one or more combination locks, but without time lock.

Another class of safes very largely used is the

#### Fire and Burglar Proof Safes,

made of several different designs, to suit the purposes for which they are required. The most simple is the ordinary fire-proof safe, having an inside burglar-proof chest, which, if honestly made, affords ample protection to the moderate amount of cash or valuables usually deposited in it. The purchaser would do well in selecting a safe of this kind to have it built according to his own specifications, instead of taking it from stock on hand. The essential requirements are that the frames, plates and general construction throughout shall be the same as described for a full burglar-proof safe, except that no 1-inch material need be used. The question of whether a combination or time lock is necessary will depend on the amount of value to be protected. The location of chest in the safe, whether in top or bottom, is a matter of considerable difference of opinion, and there are strong arguments on both sides. If placed in top it is undoubtedly more difficult to force, as being less accessible to the necessary manipulations. On the other hand, is the safe is subjected to a bad fall, in case of fire, the chances are that it will go to pieces from the weight of the chest, as it is practically impossible to secure it in this position to enable it to stand so severe a shock. If placed in the bottom it is firmly supported, not only by the frame of safebody, but also by the filling, and it is therefore reasonably safe. All things considered, the latter position may be accepted as preferable.

Steel-lined fire and burglar proof safes are used when more room is required than can be afforded by a chest. They are generally used by jewelers in which to keep their valuable stock. As a rule, they are of large size, and fitted up with elaborate cabinet work, containing trays and

drawers—the former being used in the showcases during business hours and transferred to the safe at night. In these safes the steel lining should be entirely inside of the filling, and should have heavy inside steel doors about 2 inches thick, hung by heavy hinges to the frame of steel lining, and provided with four-tumbler combination lock and heavy bolt work. It has been the practice of some makers to place a steel lining on inside of outer fire-proof doors, having the same character of bolt work as that used on bank safes; but this plan is not to be recommended as compared with the separate steel doors, as, although in some respects it is more convenient, it is not nearly so reliable in resisting an attack. One very great advantage is gained, incidentally, by the use of the steel lining. The strength of the safe is so increased that it will bear without damage a shock from falling which would utterly wreck an ordinary safe.

Fire-proof vault doors, now so generally used in office buildings are among the lines of goods manufactured by the safe maker. The essentials are merely that the doors shall be made to fit closely in their jambs, so that the air space between the outer and inner doors, forming the vestibule, shall be properly confined, and thereby make the body of contained air the only medium for the transmission of external heat. Locks and bolt work are matters of taste as to style and make.

#### Important to Coal Men.

The United States Circuit Court for the Middle District of Tennessee held, in the recent case of the United States *vs.* Jellico Mountain Coal and Coke Company, reported in the *Railway and Corporation Law Journal*, that an agreement between coal mining companies operating chiefly in one State and dealers in coal in a city in another State, creating a coal exchange to advance the interests of the coal business, to treat all parties to the business in a fair and equitable manner, and to establish the price of coal, and change the same from time to time, by which it was agreed that the price of the coal at the mines should be 4½ cents, the freight being 4 cents, and the margin of the dealer should be 4½ cents, making the price to the consumer 13 cents, and that whenever the price of coal was advanced beyond an advance in freights, one-half the advance should go to the mine owner and the other half to the dealer, and a penalty was provided by fine of any member selling coal at a less price than the price fixed by the exchange, and by which it was forbidden for owners or operators of mines to sell coal to any person other than members of the organization, and for dealers to purchase of miners who were not members, but exempting coal used for manufacturing and steamboat purposes from the prices prescribed until all the mines tributary to that market should come into the exchange, or until the exchange could control the prices of coal used by manufacturers, was within the language of act of Congress, July 2, 1890, declaring "every contract or combination in the form of a trust or otherwise, or conspiracy in restraint of trade or commerce among the several States," and also the monopolizing, or combination with another to monopolize trade or commerce among the several States, a misdemeanor.

A certificate for increased capital stock of the American Steel Barge Company was filed in Buffalo, N. Y., Saturday. The increase is from \$2,000,000 to \$4,000,000. The company's capital stock actually paid in at the present time is \$1,800,000. The liabilities do not exceed \$100,000. Captain McDougall says that with a very few

weeks his yard will be at work on eight new vessels, six of which will be steamers. The yard can now turn out a vessel every 60 days. In a little while it is the intention to turn out one every 30 days. Work will also be begun this winter on a passenger ship 450 feet long to run between Duluth and Buffalo, which will take over a year to build. It will be ready for the World's Fair. Captain McDougall, for the American Steel Barge Company, signed a contract with outside parties, whose names are at present concealed, for the construction of four steel freight steamers for lake traffic, all of which are to be completed and ready for use by the opening of navigation next spring. They will be of the whaleback style and are to be 306 feet long, 38 feet beam, 24 feet depth of hold, and are to carry 2500 gross tons on 14 feet 6 inches, with a guarantee of 25 tons additional capacity for each additional inch draft. These will increase the number of steamers and barges to be turned out by the yard this winter to 16, and the gross tonnage to over 50,000. It is surmised that these new steamers are for the Northern Pacific Railroad.

#### San Francisco News.

The season for the importation and sale of tin plate is about over. It has been, from a trade point of view, the most prosperous in the decade. The stock at present writing in the hands of importers is said not to exceed 2000 boxes. The stock on hand at the opening of the year was about 45,000 boxes. Imports to date by sea and rail have been 250,000 boxes, consequently there has gone into consumption 293,000 boxes, which have sold in this market at an average of \$6.50 per box, making close on \$2,000,000.

A good deal of the mining machinery exported is specialties patented in this city. A good deal of the Australian business is of this nature. Much of it also consists of pumps, a great many of which are of Eastern manufacture. Many of the agents of Eastern houses here were represented in the great Australian exposition at Melbourne, and there laid the foundation of a trade. And the trade in machinery with the colonies is almost certain to be done through this city, as shipping by clipper from New York takes too long a time and the East is too far distant. The New Zealand Government has renewed its subsidy to the Oceanic Steamship Company. We are promised to have two steamers a month after a while, and there is quite a business carried on between San Francisco and Sydney and Auckland especially. Several Australian houses have representatives here, while several houses here confine their attention specially to the Australian trade. It therefore is the best point in the United States for manufacturers seeking the Australian market to be represented at.

I have telegraphed you as to the programme of the Manufacturers and Employers of California. Since that time a declaration of principles has been issued, but they are in all essentials the same as I telegraphed—to promote the manufacturing interests of the coast, to peacefully settle disputes between employers and employed, to check the arbitrary spirit shown in strikes and boycotts, and to preserve the right to decide as to whom they shall or they shall not employ.

The general aspect of business has been good. Money for the crops is being distributed right and left, and there is a better feeling all round. The hardware and iron business continues to improve. There has been a reduction in the price of nails since our last. On September 16 a new list was issued, in which the card rate for iron and steel was reduced 10 cents all round, while wire nails were reduced 10

cents on 200-keg lots, under 200-keg lots remaining the same. The base now is: 200 kegs or more iron cut, \$2.60; steel cut, \$2.70; steel wire, \$3.20. Barbed wire is also lower, the base for California galvanized being \$4.75 per 100 pounds; by the carload, painted, \$4.20. Arrivals by sea since our last include, in addition to a large quantity of merchant iron, steel and hardware, 440 tons of English pig iron, 100 tons of Eastern and 300 tons of scrap. Imports by rail seem to be increasing. For the past three weeks they embraced 28 cars of machinery, 27 cars each of iron and steel, 24 cars of wire, 17 cars of stoves, 15 cars each of hardware and pipe, 7 cars of agricultural implements, 4 cars each of steel plates and plows, 2 cars of safes, 1 car each of vault fronts, steel beams, chains and rails, a total of 174 cars, besides 11,396 pounds of copper, 2232 boxes of tin plate and 250 kegs and 45 boxes of nails. This indicates of itself better business. The outlook is indeed good, and the balance of the year will do much to make up for the remissness of the earlier part.

### Sound Views on the Labor Question.

Chief Howard delivered an address before the third annual convention of the International Brotherhood of Railway Conductors, recently assembled in Louisville, Ky., which abounds in good sense and contrasts favorably with the tone of remark frequently heard on similar occasions. Speaking of the relations of capital and labor, he said: "I have been asked if I did not, as a general rule, despise capitalists, and I answered no; that I was a capitalist myself, and the world is full of capitalists. Every human being in the world that has good brains and health is a capitalist; every one who has 5 cents in his pockets over and above what he owes is a capitalist. It is impossible for capital and labor to conflict with each other. People do not always agree, but capital and labor always go hand in hand, and it is impossible for it to be otherwise. One cannot possibly exist without the other, and such men who are always engaged in trying to excite the envy of the unfortunate, the malice of the poor, should be considered as enemies to humanity and good society."

If labor agitators and would-be leaders of labor organizations had preached such doctrine there would be less bitterness between employers and employed, and the labor question would be much nearer an amicable solution than it is. Instead of antagonism and jealousy toward employers Chief Howard counseled harmony and working in close touch with them. The following advice is worth quoting: "Make it a rule to render better and better service every day for your company, take a personal interest in the affairs of your road, and assist your officials all you can; they will appreciate it. If you are working under rules that cannot be implicitly obeyed without hardships, go at once to your officers and call their attention to them, and they will gladly rectify it, but don't wait until something has happened through your violation of these objectionable rules, but go while your record is clear, and it will look better and have a better effect." Hardly any difference has occurred between employer and employed that might not have been avoided by following these suggestions.

At Offenbach, Germany, a system of pipes for the transmission of power by compressed air has been established. The pipes are placed about 18 inches below the pavement. A trial of the system showed that only about 13 per cent. of the power was lost, which was regarded as an exceedingly favorable showing.

## Models, Inspection and Gauges—II.

BY A. D. PENTZ.

(Concluded from page 492.)

### Gauges.

In inspecting the next important point after gauges are designed so far as to determine their general character and how they best may be attached and expeditiously operated is means to correct the gauges themselves when the rubbing parts on them shall have become worn so as to be incorrect. This most modern of features in gauges is best illustrated by showing the first kind of gauge to which it was furnished—the snap gauge, Fig. 3. In this kind of gauge the core or block is a piece of steel, generally hardened and lapped, but it perhaps is as good soft. This block is flat on one side and very true. On the opposite side it has two surfaces, both of which are parallel to the flat side, but one end has a thickness of 0.500 inch and the other but 0.499 inch. The flat side is covered by the long jaw A, and the other sides by the short jaws B and C. These jaws must be hardened as much as possible and lapped perfectly, so that the calipers on each end will form a limit snap gauge for "one-half inch, one thousandth down." Now, the idea in this gauge is the facility by which it may be repaired, for, of course, when the jaws are worn they may be readily removed, lapped, and when they are returned to their places they restore the gauge to its first condition of correctness. This peculiar method of making a "limit snap" is not common, but it will be found to be not so difficult to make as it looks to be, and it is nearly a half lighter than the wide double snap with two cores. Now, who invented the snap gauge I do not know, but believe that so obvious a tool is not actually invented at all. The necessity for it indicates its construction. Yet there is in this instrument a principle that has made it practical to make and use costly, elaborate and complicated gauges economically in places where they are required. The snap gauge is good not only to inspect opposing exteriors, but it is as useful on planes as on cylinders. Interiors usually are inspected by the "plug" gauge if it be practical to use such. They are as useful in parallel grooves as they are in round holes.

### PLUG GAUGES

wear very fast in detailed inspection, and to overcome the expense of grinding and lapping many short pieces I generally make them as shown in Fig. 4.

This kind of plug is some times called a "sausage" for obvious reasons, and its utility lies in the facts that it may be ground with less care than short ends, and that when one length is worn it may be broken off and the next one used. The cover-handle may be of metal, wood or leather, but care must be taken that the tannic acid in leather and some kinds of wood does not rust the surfaces.

### INSIDE SNAP GAUGE.

Sometimes I have found it economical to use the inside snap gauge and make it as indicated in Fig. 5.

This gauge is much clumsier than the outside snap gauge, but it may be used to advantage in the larger parallel slots, grooves and mortises.

### TAPER SNAP GAUGE.

Before leaving snap gauges I will show the taper snap, which has two kinds of uses. It may be a gauge for taper pins, &c., or it may be a limit gauge where in one operation both limits are indicated, and if the part passes the larger and is arrested ere it reaches the other, it is correct. This

is the wire gauge principle with the wearing surfaces correctible. (Fig. 6.)

While expansible and contractible gauges are, as a rule, pitfalls and snares, too much credit cannot be given to the screw principle, and where it is applicable—and it can be applied in many places either directly or indirectly—it outwears and is more reliable than any other principle used in gauge construction.

### COMPOUND GAUGES

are necessary for many parts where there are numerous points that bear working relations to the three dimensions, or to the points of prime importance, say as the sewing-machine arm before noted and its shaft and bar holes D D and B B. Figs. 2 and 7. A gauge for that piece will show as well as any other the application of acceptable principle to a gauge demanded by modern interchangeable methods. This gauge is of known practicability and economy, and its use makes the newer principles of inspecting foundation parts a success. Foundation parts are such parts as this arm, the bed of such a machine, or the bed or stock of any such machine, a pistol frame, a lathe apron or headstock. A gauge of this kind should receive the part it inspects as that part is received in the place it operates, or by its chief working features. Thus the headstock of a lathe should sit on a semblance of shears while its perfections are noted, but inasmuch as the seat of a sewing-machine arm is relatively small and placed so far outside its center of gravity, it is better to mount it on an arbor and lay it down flat than to trust it to so insecure a support. Fig. 7 will indicate the gauge to a degree. The holes for B B, D D, E and F are bushed so that if worn they may be corrected and retain their original positions. The arm C when mounted on the arbor D D and positioned by the plugs B B is rigidly held from movement in any direction, and, of course, if these holes be not in correct position in relation to each other the plugs will not both enter the bar holes. The bracket to gauge the take up hole is removed and shown aside and the place where it is cut from, as well as the base of the removed part, is marked A. The plug E, being long, is provided with additional length of guide to steady its course. G is a straightedge across H which can be turned on the circular slide J, to which it is held by a flange and proper gibbs. This edge G is always parallel to a plane through D D and vertical to B B no matter what position across J it occupies. It also is absolutely square with the slide J, which carries it to and from the base of the arm, and the position of G in relation to the standard base is indicated on the dial L of the screw K. Thus if the base on the arm C be correct in height the mark 0 on the dial will harmonize with the index, and if the base be of the correct plane the whole length of the edge G will touch it all the way around its circling sweep. Before leaving this gauge I wish to call particular attention to the modification of the

### SCREW GAUGE

Fig. 8, to say that the device as here made is a perfect and operative one, and that it covers a very difficult and at the same time a necessary point. The operation of a gauge of this character will if carefully watched obviate the necessity for a detailed inspection of the part it gauges, provided in the manufactory where it is used there are special and reliable tools to do each of the operations which finish the points that the gauge inspects. A reliable tool on ordinary material—gray iron, for example—will do a great many cuts before it produces defective work, and the quantity thus produced can generally be closely calculated. Therefore, if



the tools be watched and the results gauged from time to time by a reliable person, the inspection necessary for this quality of piece will be largely an inspection of the tools rather than of the part itself in detail.

face contiguous to it, that if the height of that elevation from the named surface be necessarily a close one the screw gauge is a very reliable means to indicate it. Fig. 8 shows a gauge to inspect the amount of deflection that

dial F indicates its deviation from standard. Of course many other points on this piece can be found at the same time as this one is, but the sole object of this sketch is to exhibit an application of the screw gauge to practical work.

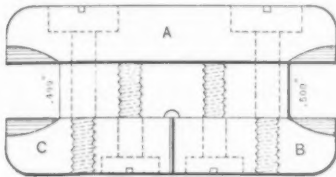


Fig. 3.—Snap Gauge.

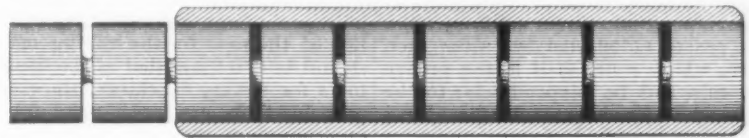


Fig. 4.—Plug Gauge.

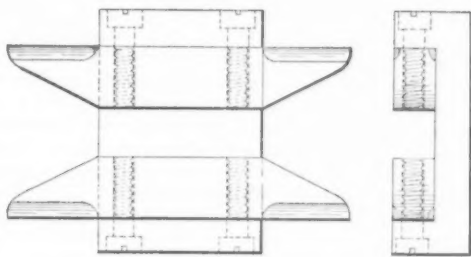


Fig. 5.—Inside Snap Gauge.

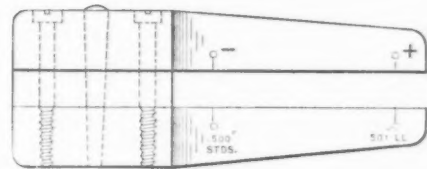


Fig. 6.—Taper Snap Gauge.

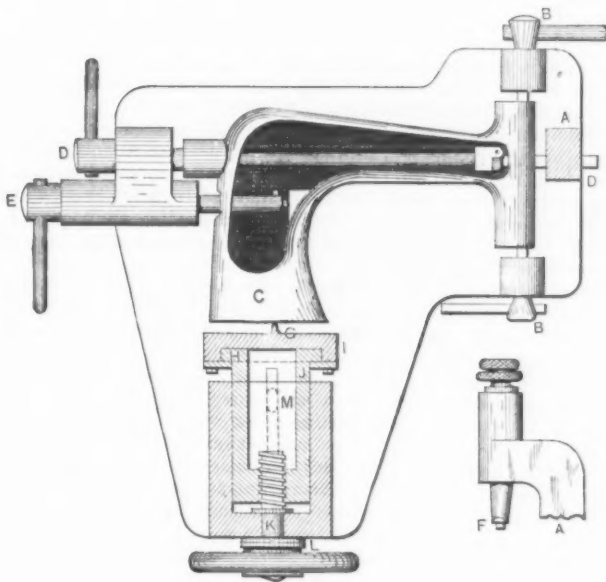


Fig. 7.—Sewing Machine Arm Gauge.

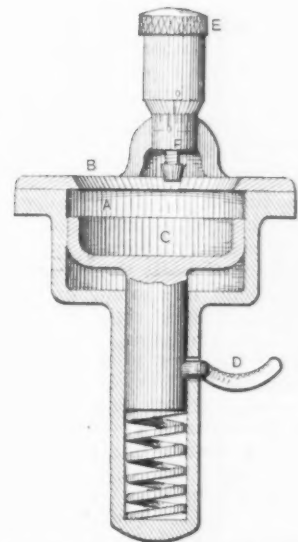


Fig. 8.—Modified Screw Gauge.

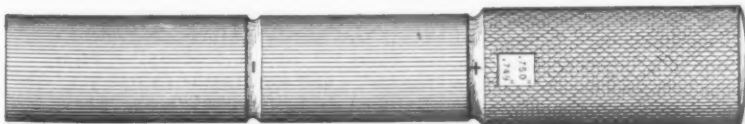


Fig. 10.—Plug Gauge.

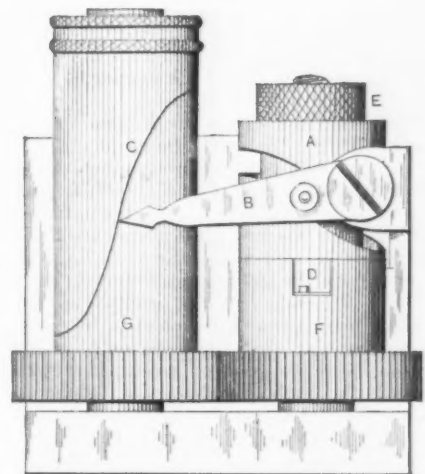


Fig. 9.—Cam Snap Gauge.

#### MODELS, INSPECTION AND GAUGES.

The application of the screw principle to gauges other than those of the ordinary micrometer order is as yet so new that some mention of it here may be well. It is found in a place where the point to be inspected is an elevation relative to a sur-

face contiguous to it, that if the height of that elevation from the named surface be necessarily a close one the screw gauge is a very reliable means to indicate it. Fig. 8 shows a gauge to inspect the amount of deflection that

#### CAM GAUGE.

Precise irregular motions may be got by cams, but the problem of making a good cam is no greater than the problem of gauging its time; and therefore I will here show a sketch of a gauge, Fig. 9, which to

my knowledge is the only kind that has been found at all reliable for this species of cam. The cam A is secured by the nut E to the hub of the gear F, and the time stud D secures it to a proper circular position in relation to its groove, the index B being fulcrumed at the actual relative point where the lever that is to be operated by the cam shall be fulcrumed in the machine, and fitted with a roller at the proper radial distance from such fulcrum, which roller shall fit the groove in the cam and be perpendicular to the plane in which the index oscillates. Now, when the cam is rotated, of course the gears F and G will be rotated. The index B will be moved under the influence of the cam groove; its point, of course, will travel greatly further than the roller does, and describe an arc over the cylindrical hub of the gear G. Then, because the hub of the gear G is revolving and the index B is moving forward and backward, this arc will be distributed around the whole cylinder, and the two motions will describe on the cylinder and under the point of the index an exaggerated profile of the center of the groove in the cam, and if this profile be engraved or dotted on this cylinder, as C, variations in subsequent cams from the standard will certainly be indicated and magnified. With a reliable cam-cutting machine cam grooves need to be but infrequently inspected; but this fact does not affect the necessity of knowing when they are doing correct work. When a product is wrong as a whole it must be wrong in some of its parts, and means should be provided to prove every part.

#### Limits to Sizes.

In the production of interchangeable machinery the question of limit is one ever present. The makers of parts want large and generous limits, while the assembling departments would like exact, unwavering perfection. What is right is what is on the whole most profitable. Now to determine what is the most profitable is, in this particular, a very complicated question. In considering this question it will be taken as granted that a business is intended to be a permanent one, and that its management wishes so to conduct its affairs that it will be more profitable in future than at present. Then the things to be considered are what quantities are now made, what quantities are expected to be made by the preparations now contemplated, and the character of the work. If the production be small and the prospective demand be but a limited one, the question of tools to produce work is a most trying one. Accurate work cannot be well done, to gauge, without tools.

The character of the work also determines whether tools shall be largely made. The tool outfit for a milling machine of which are made not more than 400 a year has as great a value (cost) as the outfit of a sewing machine of which there are 100,000 made in one year. Now, calling the profit from the milling machines at \$200 each as \$80,000, and the profit from the sewing machines at \$10 each as \$1,000,000, it will be seen that the question of profit cannot be taken to mean relative profit to outlay for tools, but by tools. It being admitted that the sewing machines alluded to in the hypothetical statement above will be made to as close limits as the milling machines are, and that without special tools, but with hand labor alone, the sewing machines would cost the full selling price, which we will call \$50, and the milling machines without special tools, but by hand labor alone, would cost their selling price also, which we will call \$500. It will be seen that the profit by special tools over hand labor is 40 per cent. for the milling machines and but 20 per cent. for sewing machines. Therefore in this case it would be the large quanti-

ties of sewing machines produced that made the greater aggregate profit, while the item of wages spent in making the 100,000 sewing machines should be about eight times as much money as the same item to make 400 milling machines. Lastly, \$100 worth of tools would in this case make the same proportionate part of 250 sewing machines that it would of one milling machine, and, all being equal, the life of the tools for the milling machines should be 250 times that of the life of the tools for sewing machines, showing that probably tools are much more profitable on large work than on small work, provided the interest on the cost does not figure too largely in the balance sheet where the production is relatively small.

Limits for sizes under 1 inch may be stated thus. This limit should be  $\frac{1}{1000}$  inch in gauge and fit one limit tightly and not touch the other. In fixing limits for running fits, cylindrical, if the plug gauge for the hole be made of two sizes, the larger size being one-thousandth larger than standard and the smaller end exactly the standard size, like sketch, Fig. 10, and if the smaller end enters the hole freely while the larger size is tight. Then for the stud or shaft, if the snap gauge be made in the large limit the same standard size as the small end of the plug gauge for the hole, and the small limit be one-thousandth of an inch smaller than standard; and if this gauge be used to accept only such work as is free in the large side and tight in the small side, a good free fit will be had. For sizes over an inch, especially if the journals be long, this limit may be enlarged.

In conclusion, I can say it is a simpler and pleasanter situation for an engineer to design and inspect under employers making progressive demands and giving an appreciative co-operation in getting results that pay than it is in trying to improve and advance the quality where even his salary is begrudged, while the money spent to construct useful tools is considered wasted, and the results obtained from the use of tools is either credited to the superiority of superintendence or ignored. Thus, the ambitious man who gets results should give the preference, in taking a situation, to the concern that believes in money-making tools, and to the concern where the management comes into contact with the producer. On the other hand, no management that considers its pecuniary interest can afford to be so far elevated above those who labor for its interests as to be out of touch with them, ignorant of their efforts and their interests, or to be anything but an incentive to serious work and an example for their guidance.

Dallett & Co., 204 Walnut street, Philadelphia have been appointed sales agents for the Weldon, N. J., Magnetic Ore. An analysis made by H. J. Detwiller, from samples covering shipments monthly for one year, shows the following: Silica, 7.61 per cent.; alumina, 1.37 per cent.; iron, 58.96 per cent.; lime, 2.72 per cent.; magnesia, 0.69 per cent.; manganese oxide, 1.27 per cent.; phosphorus, 0.264 per cent.; sulphur, 0.014 per cent.; titanium, 0.96 per cent.

The core saw, intended for boring out barrels from solid logs, was recently completed at Taunton, Mass., for a company in Lacrosse, La. The saw is made of wrought iron, cylindrical in shape, and steel cutting teeth are distributed about its edge. It was expected that the saw would cut a barrel per minute, and during a trial of the first machine a core  $10\frac{1}{2}$  inches in diameter and  $21\frac{1}{4}$  inches long was bored out in 30 seconds. A mill for the manufacture of barrels by these machines is to be built in Louisiana.

## The Amalgamated Association—I.

### A FEW CHAPTERS FROM ITS CONSTITUTION.

We present below some of the more interesting articles of the constitution of the Amalgamated Association of Iron and Steel Workers, which reveal some of its aims and methods:

#### ARTICLE VI.—REVENUE.

*Section 1.* The revenue of this association shall be derived as follows:

For organizing a subordinate lodge, the sum of \$25 dollars shall be charged, said sum to be paid at the time of organization. The supplies to be furnished a newly organized sub-lodge, which the organization fee of \$25 dollars is intended to cover, shall be: 1 charter, 1 seal, 3 rituals, 25 constitutions, 25 due cards, 10 withdrawal cards and 8 quarterly report blanks. Additional supplies shall be charged for as follows:

For issuing a duplicate charter (for one destroyed) to a subordinate lodge, \$5; remodeling an old seal, \$4.50; rituals, \$1 each; constitution and general laws, 5 cents each; quarterly report blanks, 5 cents each; scale of prices, 5 cents each; due and withdrawal cards, 5 cents each.

*Sec. 2.* In order to create a fund to meet the expenses of the National Association it shall be the duty of the president to assess a quarterly per capita tax on the different subordinate lodges, sufficient to defray the expenses of the National Association.

*Sec. 3.* In order to create a fund for the support of victimized members, or such members as may be engaged in legalized strikes, it shall be required that each member of the association shall pay to his lodge for the Protective Fund the sum of 25 cents per month.

*Sec. 4.* At the last stated meeting in each quarter the financial secretary of each lodge shall report to the lodge the correct number of members on his books taxable to the Protective Fund for the quarter, when an order shall be drawn on the treasurer for a sum equal to 75 cents for every member on the books thus reported by the financial secretary, and the sum thus drawn on the treasurer shall be given to the corresponding representative, who shall, as soon as possible, forward the same to the secretary of the National Lodge, who will receipt therefor.

*Sec. 5.* In order to replenish the Protective Fund when it has been depleted by a long and continuous drain thereon the president of the National Lodge shall have discretionary power to levy a special assessment upon each member reported in good standing on the past quarterly report (except members on strike or out of work two weeks), which assessment must be collected by the financial secretary of the lodge and sent to the secretary of the National Lodge without delay.

*Sec. 6.* Any member who is sick or out of employment during the period of one full month shall be exempt from paying the 25 cents per month to the Protective Fund until he recovers from his sickness or finds employment. But members out of employment must report the fact to their lodge at every regular meeting or be charged with the 25 cents per month to the Protective Fund.

*Sec. 7.* All moneys due to the National Association shall be forwarded to the secretary thereof by draft (on New York, Philadelphia or Pittsburgh), express, post office order or registered letter. For check sent on any bank, except in the city of Pittsburgh, 25 cents extra will be charged for collection.



## ARTICLE VIII.—STRIKES.

*Section 1.* No sub-lodge under the jurisdiction of this association shall be permitted to enter into a strike unless authorized by the Executive Committee of their district or division.

*Sec. 2.* When the Executive Committee of a district or division find it necessary, in accordance with the laws of this association, to legalize a strike in any one department of a mill or works, it shall be required that the men of all other departments shall also cease work until the difficulty is settled.

*Sec. 3.* When a strike has been legalized, and the general office of the association has been properly notified of the fact, in writing, the secretary of the National Lodge shall at once prepare a printed statement of all the facts in the case, as near as possible, and forward the same under seal of the National Lodge, to all sub-lodges, warning all true men not to accept work in such mills, shops or factories.

*Sec. 4.* Any subordinate lodge entering into a strike in the manner provided by the laws of this association, shall receive from the Protective Fund the sum of \$4 per week for each member actually engaged in the strike in the mill over which the lodge has jurisdiction, provided they remain in the locality of the strike, or notify the corresponding representative of that lodge of their location and their being unemployed each week while on strike, and have held membership in the association for six months, are not in arrears, and the lodge to which they belong is in good standing in the National Association. Except a strike has been legalized three months prior to July 1, no benefits shall be paid to any member for any strike during the months of July and August. This section also applies to members who are standing turns in the mills on strike, and who hold no other situation except that of standing turns in that mill.

*Sec. 5.* If, upon investigation, it is found that benefits have been paid to a member not entitled to them the lodge in which such member or members, receiving such benefits, held membership shall be held responsible for the amount thus paid, and said amount shall be charged up to such lodge.

*Sec. 6.* No member shall be entitled to strike benefits for the first two weeks while on a legalized strike. Payment of benefits shall date from the commencement of the fourth week after the strike has been legalized, and no benefits shall be allowed for the fractional part of the first week.

*Sec. 7.* A member who has been suspended or expelled shall not receive any strike benefits (whether engaged in a legalized strike or is victimized) until six months after he has been restored to membership.

*Sec. 8.* If any member or members, while receiving benefits from this association, shall work three or more days in one week, at any job, either in or outside of a mill or factory, he or they shall not be entitled to benefits for that week. Any member on the benefit list, either on strike or victimized, refusing to work a third turn in a week, with a view to securing his benefits, his name shall, if proven against him, be stricken from the benefit list. Members out of employment or idle for repairs when a strike takes place in one department of the mill, (those who were idle previous to the commencement of said strike, and were idle at the end of it) cannot be considered on strike, nor entitled to strike benefits.

*Sec. 9.* No member or members of this association shall be entitled to strike benefits for a strike in any mill or factory in which he or they have the mere promise of a situation. That is to say, if a member has been promised a situation in a mill

and said mill should go on a strike before he begins to work he shall not be entitled to strike benefits during said strike.

*Sec. 10.* No member of this association shall be entitled to strike benefits because of his refusal to work in a black sheep or non-union mill.

*Sec. 11.* Any member engaged in a legalized strike, procuring a permanent situation elsewhere, forfeits his claim to strike benefits during the continuance of such strike.

## ARTICLE IX.—VICTIMIZED MEMBERS.

*Section 1.* Should any member or members of this association be discharged (victimized) from his or their employment for taking an active part in the affairs of this association, either as a member of the Mill or Conference committees, or for otherwise being active in promoting and guarding the interests of this association, such member or members shall use his or their best endeavors, with the manager, to get reinstated, and failing in this, he or they shall then and there report such case to the chairman of the Mill Committee, who shall at once proceed to investigate the case as set forth in Sections 2 and 3 of Article VII. Should the committee fail to get the brother or brothers reinstated, they shall then carry the case to the lodge in precisely the same manner as in cases where the whole mill is involved in difficulty, and in no case of individual discharge (except the Mill Committee has good grounds to believe that the brother is discharged without just cause) shall such job be declared vacant until the Executive Committee of the district or division has decided the case.

*Sec. 2.* Should the Executive Committee of the district or division, after deciding the brother victimized, deem the organization unable to sustain a strike for his reinstatement, he shall receive from the Protective Fund of the association \$6 per week for a period of eight (8) weeks and no longer, unless in extreme cases, when it shall be left discretionary with the president of the National Lodge as to the length of time benefits shall be paid. If within the limit of time (eight weeks) prescribed for the payment of victimized benefits a situation has been procured for him, either by himself or other members of the association, payment thereof shall immediately cease. The law applying to the payment of victimized benefits shall be the same as that governing the payment of strike benefits.

*Sec. 3.* If, upon investigation it is found that victimized benefits have been paid a member not entitled to them, the lodge in which such member receiving benefits held membership shall be held responsible for the amount thus paid and said amount shall be charged up to such lodge.

## ARTICLE X.—MILL COMMITTEES AND THEIR DUTIES.

*Section 1.* Each sub-lodge shall have a Mill Committee, consisting of three members on each turn, from each department represented in the lodge, and any member in good standing in the lodge, and holding a job in the mill where the lodge exists, can be appointed on the Mill Committee, whether at the meeting or not, provided he is 21 years of age and has been a member of this association one year, and all excuses from serving on said committee must be granted by a two-third vote of the lodge. This law shall not apply to newly organized lodges where the members have not held membership for one year.

*Sec. 2.* It shall be the duty of said committee to superintend and guard the interests of the association in their several departments, and when it becomes apparent that any advantage is being taken of our laws or any member of this associa-

tion, and the committee of the department where this occurs has failed to adjust the difficulty, then the committees of the other departments, in conjunction with the committee having the grievances, shall jointly exhaust every effort with the manager of the works to settle the difficulty before reporting the case to the vice-president of their district or division. In case the Joint Committee fail to meet, the lodge having the grievance shall have power to call on the vice-president of the district or division.

*Sec. 3.* When the Joint Committee, after using all honorable means to bring about a settlement of the difficulty, have failed, they shall immediately call a special meeting of their respective lodges jointly, and all members of each lodge working in that mill shall be notified by the Mill Committee to attend the same.

*Sec. 4.* At said special meeting the grievance pending shall be explicitly stated by the members of the Joint Committees, and if the joint meeting consider the grievance sufficient, the corresponding representative of the lodge having the grievance shall, by instructions of his lodge, under their seal, and in no other manner, notify the vice-president of the district or division, and work shall continue until the vice-president has investigated the case.

*Sec. 5.* The communication sent to the vice-president, as set forth in Section 4, shall in turn be sent to the general office of the association by the vice-president as a guarantee that the sub-lodge has complied with the law prior to the vice-president going to investigate the case.

*Sec. 6.* In mills or factories where the manager, superintendent, foreman or boss absolutely refuses to recognize the Mill Committee in the settlement of any difficulty in which this association is interested, the committee shall immediately call a special meeting as set forth in Section 3 of this article, and carry out the instructions as laid down in Section 4.

## The Reeves Iron Company.

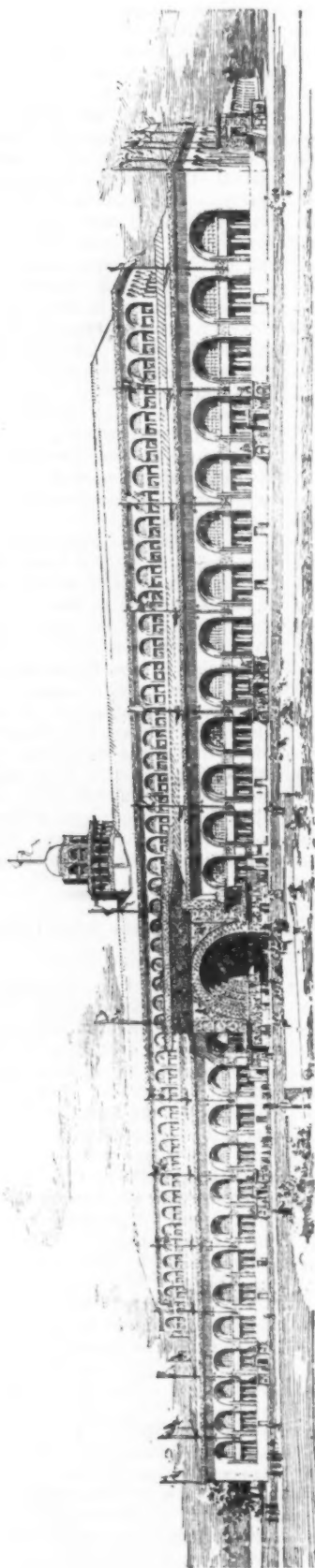
The Reeves Iron Company of Canal Dover, Ohio, have recently doubled their capacity for the production of bar iron, and are now in a position to furnish a full line of sizes up to 4½-inch rounds, 4-inch squares and 7-inch wide flats. They manufacture all sizes of Bessemer steel bars and roll light rails running from 10 to 22 pounds per yard. They have also added sheet mills and galvanizing works, which have all the improvements that ingenuity and experience could suggest. Their sheet product Juniata galvanized iron, perfectly leveled, cold-rolled smooth steel sheets, cold-rolled sheet iron, common box annealed sheet iron, and sheet iron and sheet steel for all purposes, from No. 10 to No. 30 gauge. There is no connection now between the Reeves Iron Company, at Canal Dover, and the New Philadelphia Iron and Steel Company, at New Philadelphia. J. E. Reeves of the Reeves Iron Company was until recently also president of the latter company, but has now severed his connection with it, and will in future devote himself exclusively to the management of the Reeves Iron Company. The Chicago agency for both these Companies has been hitherto held by W. C. Brown, 45 La Salle street, but he has tendered his resignation to the New Philadelphia Company in order to avoid any conflict of interests, and will now devote his entire attention to the business of the Reeves Iron Company. The Western consumers of iron and steel will note the varied character of the product of this company, and the enlarged opportunities which Mr. Brown now possesses to meet their requirements.

**Transportation at the World's Fair.**

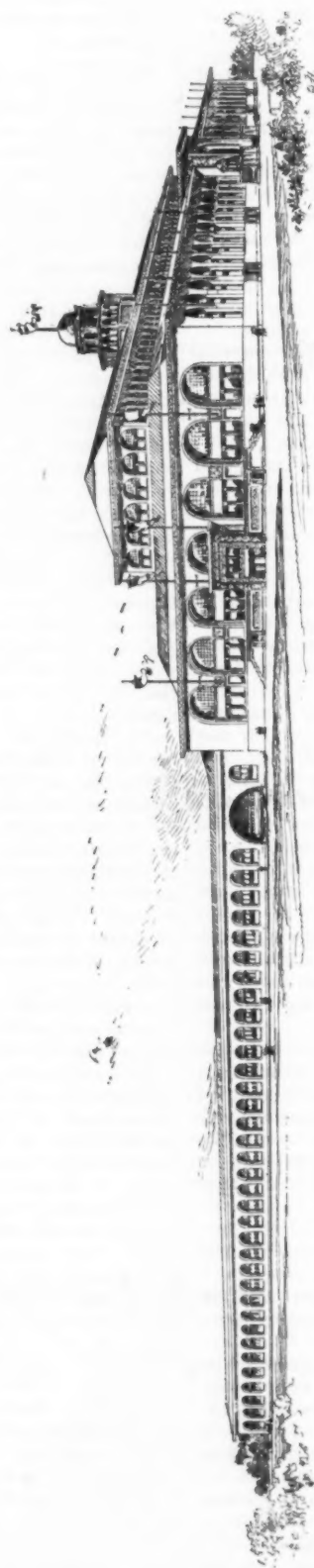
Willard A. Smith, chief of the Department of Transportation Exhibits of the World's Columbian Exposition, has issued a prospectus and a classification. It is the intent of the department that it shall fully

craft from the crudest forms to the modern ocean steamship; of wheeled vehicles from the first inception of the idea of the wheel to their present seeming perfection, and of that greatest of all means of transportation—the railway—will also be further illustrated by accurate models, drawings,

advantage. As far as possible arrangements should be made by joint agreement for showing everything in its proper place and relations. Locomotive appliances can best be shown on locomotives and the appurtenances and furnishings of cars on cars. Specimens of standard permanent



*Front Elevation.*



*End Elevation of Main Building and Annex.*

THE DEPARTMENT OF TRANSPORTATION AT THE WORLD'S COLUMBIAN EXHIBITION.

and fairly present the origin, growth and development of the various methods of transportation used in all ages and in all parts of the world. As far as possible the means and appliances of barbarous and semi-civilized tribes will be shown by specimen vehicles, trappings and crafts. Past history will be illustrated by relics of the earlier days. The development of water

plans and designs in cases were the actual apparatus, appliance or machine itself cannot be exhibited.

*The Railway Exhibit.*—A space of over 8 acres is devoted to this interest. The plan adopted provides for the best possible utilization of space. Exhibitors will have every opportunity for showing their appliances and devices to the best

way will afford opportunity for showing track materials, tools and all that appertains thereto in the best possible manner. It is believed that nearly all of the establishments engaged in locomotive, car and bridge building will be represented. A large number of the leading railways of the world will also make exhibits of their standard roadbed, track and equipment.



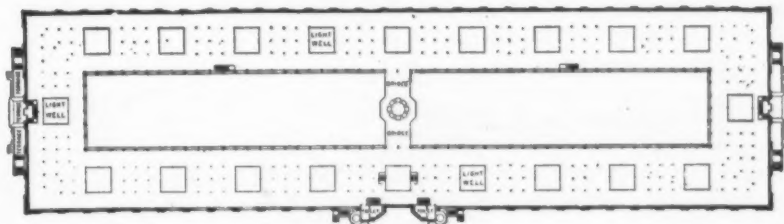
**Intramural Transit.**—Street railways, surface, underground and elevated, are to be shown very completely in this department. Everything relating to their permanent way and equipment is here included—with the single exception that electric motors must be shown in the Department of Electricity. Cars and other supplies for electric roads belong in this department—a division which, while seeming to be arbitrary, is evidently necessary.

**Carriages and Other Vehicles for Common Roads.**—A large portion of the floorspace of the Transportation Building proper will be devoted to this display. Included in it it is hoped to show with heretofore

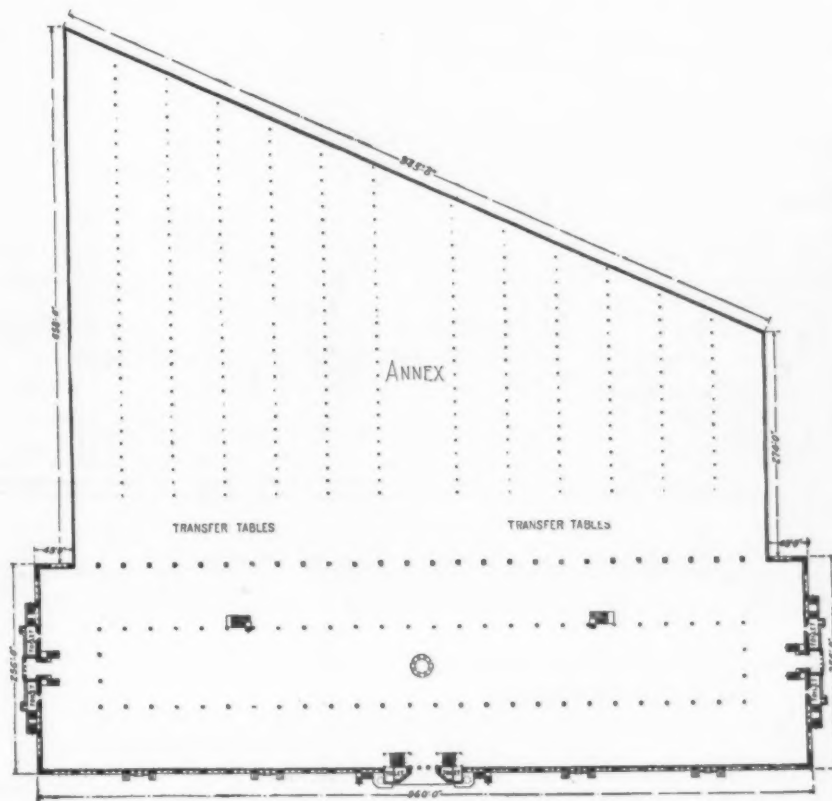
**Marine Transportation.**—Every known method of transportation on water may be shown in this division. Small craft of all kinds may be exhibited in full size; vessels, from the nature of the case, must be shown by models. For fuller illustration, drawings, plans and paintings will be shown. Principal attention will be given to the merchant marine. The navigation of the inland waters of the world, especially the great lakes and rivers, will doubtless be illustrated more fully than in any previous exposition. The classification provides also for everything of interest connected in any way with the subject of navigation. As the Government of the

arch, decorated with carvings, bas reliefs and mural paintings. It will be treated entirely in gold leaf and will be known as "the golden door." Numerous minor entrances are provided, as shown in the plans, and with them are grouped terraces, seats, drinking fountains and statues. The interior of the building is treated much after the manner of a Roman basilica with broad nave and aisles. The roof is in three divisions; the middle one rising much higher than the others and its walls pierced to form a beautiful arcaded clerestory.

The main building covers a space of 960 feet in length by 256 feet deep—but as shown in the plans, the main floor includes nearly 9 acres of additional space under roof. The total floor space, including the entresol, is nearly 17 acres. A 75-foot transfer table will traverse the annex along the western line of the main building. Railway tracks will be laid in the annex at right angles to the transfer table. The heaviest locomotives and cars can be run direct from the installation track, which runs alongside the southern end of the building, upon the transfer table, which will take them to their proper track inside the building. The length of these tracks is such that an entire train can be shown connected as when in actual use. When installation of heavy exhibits has been completed the pit of the transfer table will be floored over. The annex will open into the main building in such a manner as to afford long and striking vistas down the main avenues and aisles.



Floor Plan of Entresol.



Ground Plan of Main Building and Annex.

unequal completeness all of the characteristic forms and types of wheeled vehicles, except those used on railways. The classification is to be closely maintained, and exhibits of this nature from all countries are to be shown together, so that the most interesting and instructive comparisons may be made.

**Bicycles.**—This most recent of all road vehicles will receive the attention to which its unequal popularity and rapidly increasing use entitle it.

**Aerial, Pneumatic, &c.**—Transportation through the air and by means of air is yet in a comparatively undeveloped condition. Whatever is worthy in past achievements may here appear, and whatever there is of present success or future promise. Whether or not this realm is ever conquered by human ingenuity, the subject will always be a fascinating one.

United States will make its naval display in connection with its own building, the scope of Group 86, devoted to vessels of war, is somewhat limited.

#### The Building.

The building for the display of transportation exhibits is eligibly located on the western bank of the large lagoon surrounding the beautiful wooded island, which occupies nearly the center of the exposition. The building is surmounted by a cupola reaching a height of 165 feet. Eight elevators will run from the center of the main floor to balconies surrounding the cupola at heights of 115 and 128 feet. The architects of the building are Messrs. Adler & Sullivan of Chicago, who are well known as the architects of the Auditorium and other great buildings. The main entrance will consist of an immense

#### The Record of Franklin Furnace.

In the discussion of James Gayley's paper on "American Blast Furnace Practice," John M. Hartmann called attention to the work of a furnace belonging to the Franklin Iron Mfg. Company of New York, working on fossiliferous hematite of the Clinton group, anthracite coal from Scranton, Pa., and Connellsville coke. The furnace, which has a cubic capacity of 6731 feet, and ten tuyeres, 4½ inches diameter, 6 feet up from the hearth, has a water-cooled bosh and tuyere and crucible jackets. The hearth is 10 feet 6 inches diameter, and there is one cinder notch, 4 feet up from the hearth. The furnace is worked with two blowing engines and three fire-brick stoves. One week's work in 1886 showed the following results:

Fuel, one-third coke, per ton of pig.....	2,538 pounds.
Ore per ton of pig.....	5,091 pounds.
Limestone per ton of pig.....	1,426 pounds.
Blast per minute.....	13,514 cubic feet.
Temperature of blast.....	1,100° F.
Temperature of escaping gas.....	210° F.
Iron produced—No. 1, 342 tons; No. 2, 260 tons; No. 3, 12 tons.....	614 tons.
Cinder per ton of pig made.....	2,474 pounds.
Yield of ore.....	44 per cent.
Ratio of escaping gases by weight $\frac{CO_2}{CO}$ =	0.038

Cubic feet of air per minute per 1000 feet of contents..... 2,000 feet.

The furnace, for the whole year 1889, gave the following results after relining:

Fuel, one-third anthracite, two-thirds coke.....	3,091 pounds.
Ore.....	5,376 pounds.
Limestone.....	1,485 pounds.
Iron per week.....	583 tons.
Output—No. 1, 11,002; No. 2, 16,846; No. 3, 2476.....	30,324 tons.
Average heat of blast.....	1,250° F.
Maximum heat of blast.....	1,350° F.
Average air per minute.....	16,000 cubic feet.
Maximum air per minute.....	18,100 cubic feet.
Average pressure.....	9½ pounds.
Maximum pressure.....	11 pounds.
Average yield of ore.....	41.8-10 per ct.
Air per minute per 1000 cubic feet of contents.....	2,277 cubic feet.
Maximum air per minute per 1000 cubic feet of contents.....	2,680 cubic feet.

There are now in operation in the United States 354 electric street railways, with nearly 3000 miles of track. All but about a dozen have come into existence within the last three years.

### New Shop of the Berlin Iron Bridge Company.

In the designing and construction of manufacturing plants the three great objects to be kept in view are: The minimum cost of manufacturing the product, the minimum cost of maintenance and repairs and the lowest first cost of building. Many manufacturing concerns reverse the order and reduce the first cost of building to the absolute minimum without regard to economy of maintenance or of manufacture. This is somewhat desirable in the manufacture of a class of goods where the profits are large and the capital is limited, so that in time cheap wooden

plants in this country, the buildings were originally designed for but a limited amount of product, and as the business of the company has extended from year to year additions have been made until the original buildings have sunk into insignificance and the additions comprise the greater portion of the plant. Owing to the limited amount of land available the company decided to build their new plant on the east side of the Mattabessett River, in the town of Cromwell, connected with the old plant by an iron bridge of sufficient capacity to not only carry the narrow-gauge cars which move their material about the premises, but also to carry an ordinary standard-gauge locomotive and loaded cars.

in such a way as to admit of the economical discharge of the raw material and the quick and economical loading of the finished product. The standard-gauge tracks extend the whole length of the plant on each side and at the front of the building from which the finished product is discharged there are other spur tracks of standard gauge, one of which enters the building for a distance of 120 feet, so as to admit of iron being loaded inside of the building during wet weather. All the tracks are controlled at the front of the building by two jib cranes so arranged as to work from a four-drum Mundy hoisting engine, so that one man can operate both cranes at the same time. The loading facilities are of such a nature that ten cars

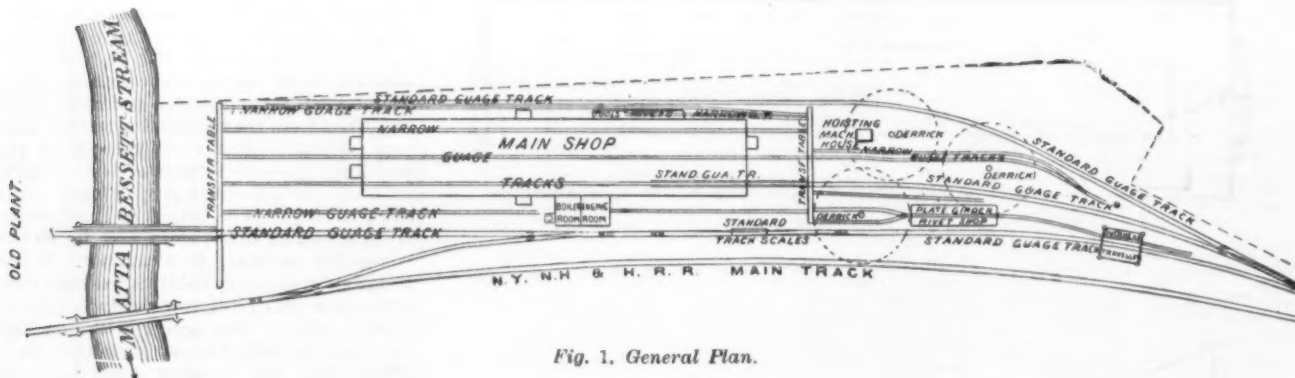


Fig. 1. General Plan.

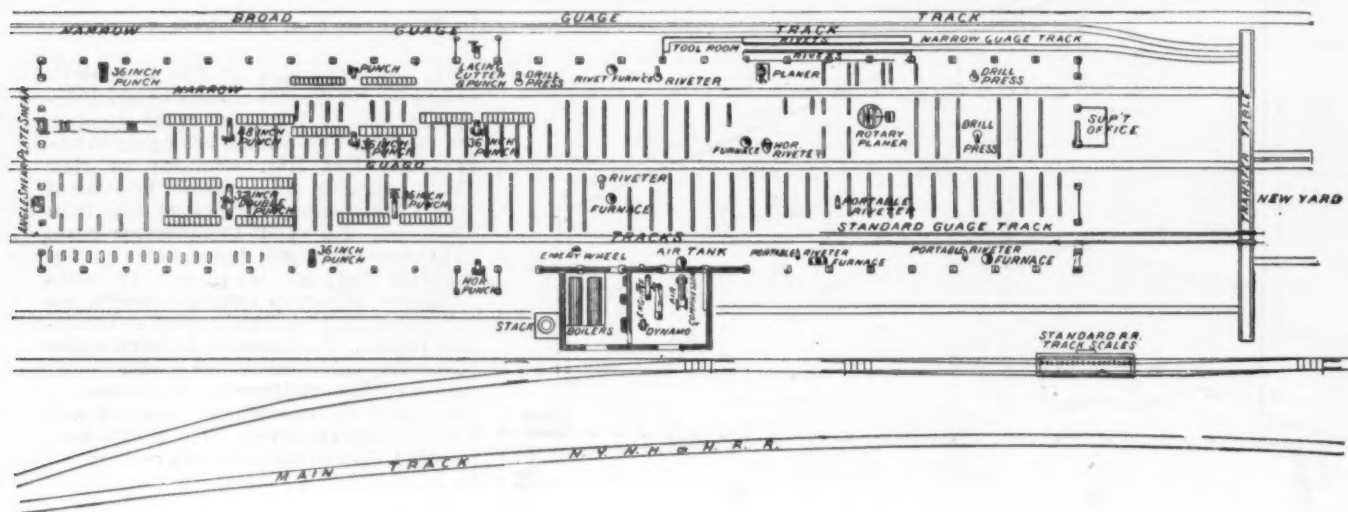


Fig. 2.—Plan of Main Shop.

### NEW WORKS OF THE BERLIN IRON BRIDGE COMPANY.

buildings may be removed and modern brick and iron buildings be substituted, but at the same time if the reduced cost of maintenance and the reduced cost of manufacture be taken into account, the saving would pay a very large interest on the original cost of a better class of construction. No company in this country has probably had as large experience in the designing and construction of manufacturing plants as the Berlin Iron Bridge Company of East Berlin, Conn., and, therefore, we present to our readers in this issue some illustrations showing the character of the plant which they have lately built at East Berlin, Conn., for their own work.

The old plant of the Berlin Iron Bridge Company is situated on the west side of the Mattabessett River in the town of Berlin, Conn., and comprises about 5 acres of land well covered with buildings, but, like a large class of the manufacturing

The general plan of the company's new plant is shown in Fig. 1 and comprises about 3 acres of land located along the line of the N. Y., N. H. and H. Railroad. The main building is 400 feet long by 80 feet wide, constructed entirely of brick, iron and glass. The general features of the construction are shown in the interior view, Fig. 3, taken from a photograph. The sides of the building are made of glass for a distance of 10 feet from the eaves and below that are constructed of iron sliding doors, so arranged that they can be opened and closed quickly in order to allow the material to enter when necessary, and in summer they can be removed entirely, thus very materially adding to the comfort of the employees. The roof trusses are of iron, each truss being designed to carry 10,000 pounds at any point along the line of the lower chord. The whole plant is connected together by standard-gauge tracks

can be loaded in an ordinary day of ten hours.

The building itself is served by three lines of narrow-gauge tracks, one on each side and one through the center, the tracks being connected at each end of the building by transfer tables, the transfer tables also connecting these tracks with the tracks in the yard. The raw material is distributed on each side of the main building direct from the cars, and after being sorted is moved by means of the narrow-gauge tracks into the north end of the shop—the end shown on the left of the illustration—where it is laid out from templates, trimmed at the shears and prepared for the punches. The punches are all arranged with a "drop motion," so that the punch can drop down on the work, and thus the operator is able to find the center mark and punch the hole exactly in the proper place. From the punches the material goes to the rivet-



ing machines, and from the riveters to the planers, drills, &c., and out at the south end of the shop, so that under no circumstances is there any occasion for work to pass except in one direction through the shop, the raw material coming in at one end and the finished product passing out at the other.

The interior of the building is lighted, as above noted, by the windows on the sides. Besides, there is a skylight 10 feet long in each side of the roof the whole length of the building, so that it is so well lighted that the finest work can be done in any part of it. The building is heated by the well-known Sturtevant system of hot air, and all furnaces, both under the boilers and for rivet heating, are equipped with fuel oil burners, so that crude petroleum is used entirely for fuel through the whole plant, although the boilers are so

awaited with great interest. William Deering & Co. use in their works over 100 tons of coal daily.

### NEW PUBLICATIONS.

POOR'S DIRECTORY OF RAILWAY OFFICIALS AND MANUAL OF AMERICAN STREET RAILWAYS. Published by H. V. & H. W. Poor, 70 Wall street, New York. Price, \$2.

A new edition for the year 1891 has just been issued of Poor's Directory of Railway Officials. It includes a list of all the officials of all the operating roads in the United States and Canada and of the chief railroads in Mexico, embracing a similar list of general managers and general superintendents, and a third list of the chief engineers, followed by the master car builders, the master car painters, the purchas-

an enumeration of the railroads projected and under construction. The whole appears to be compiled with great care, and will be found useful to many manufacturers for mailing circulars and as a directory.

THE BUSINESS OF TRAVEL. By W. Fraser Rae. Thomas Cook & Son, New York.

The famous tourists' agency of Thomas Cook & Son has lately published a neat little volume commemorative of the completion of a 50 years' business career, which began in 1841 with an excursion from Leicester to Loughborough, a distance of 12 miles. It may be of interest to cite from the volume before us some facts bearing on the career of Thomas Cook, the founder of the business. He was born at Melbourne, in Derbyshire, in

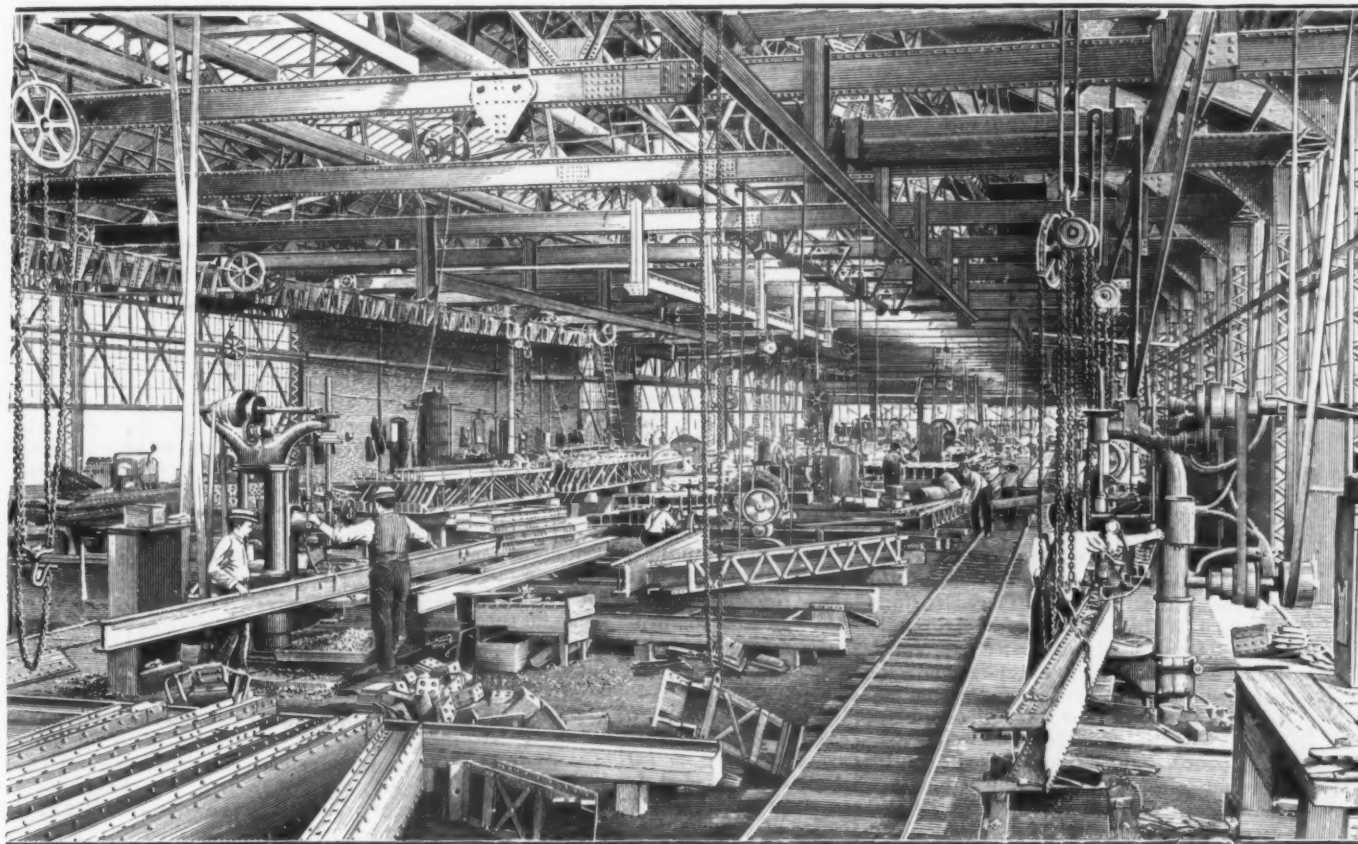


Fig. 3.—View Showing General Features of Construction.

### NEW WORKS OF THE BERLIN IRON BRIDGE COMPANY.

arranged that coal can be used if desired. The plant is lighted by Thomson-Houston dynamo, with 250 incandescent lamps and 12 arc lamps, all on the same circuit, the arc lamps being used to light the yard and general light for the shop, with two incandescent lamps at each machine. The whole plant is constructed of iron, with no wood work about it, so that there is absolutely no risk from fire, and the company are not obliged to carry any insurance. The construction being of iron, the cost of maintenance consists only of painting, so that here we have a plant which seems to combine all the requisites of improved shop practice. The cost of maintenance, repairs, insurance and that class of expense is reduced to an absolute minimum.

William Deering & Co. of Chicago have arranged with the Chicago Smokeless Fuel and Gas Company for a trial of the Hall fuel-gas system. So much skepticism exists in gas-making circles over the value of this process that the outcome will be

ing agents and the master mechanics. What may be termed the second section of the work deals with the street railroads, the information being similar in character and scope to that printed concerning the railroads in the well known manual. In a good many cases, however, all the information is not available. Some of the data collected are presented in tabular form, that being done in the case of Massachusetts, New York and Pennsylvania. The totals are given only for the first named State. Lists are presented also of the private railroads of the United States, the majority of which are short spurs built by lumber companies and by mining concerns. One chapter, which it would seem would be better in place in the manual proper, is that relating to the railways and tramways of Mexico, Central and South America. A list of the general and transfer offices of the railroad companies is appended, the whole being closed with an alphabetical list of all the railroad officials. There are also somewhat voluminous appendices embodying supplementary information, and

1808, and was forced to leave school at the age of ten to accept employment in the garden of the Melbourne estate, where he was paid at the rate of a penny a day. Later he was apprenticed to his uncle, a wood turner, but subsequently was employed by a printer, drifting finally into the field of missionary labor. In 1828 he was appointed a Bible reader and village missionary for the county of Rutland, and during that year, according to the record of his diary, traversed 2592 miles as a missionary, out of which he walked 2106 miles. A few years later he resumed his business as wood turner, and, becoming deeply interested in the temperance movement, suggested the plan of running a special train from Leicester to Loughborough for the occasion of a meeting at the former place. This is believed to be the first publicly advertised excursion train running in England, and it is worthy of note that the charge then made for the double trip is the same as the charge for one which is made now by excursion trains between the two places. It was recorded

as a great feat, and associated Thomas Cook with the enterprise in a manner which soon led him to make the simplification of traffic a business. One of the greatest undertakings in his early career was the organization of an excursion of 4600 school children and teachers from Leicester to Derby and back at the time of the races. Year after year his excursions went further, so that about 1850 he had pretty thoroughly arranged for trips in England and Scotland. A plan to make a trip to America in the winter of 1850 was abandoned for the undertaking of arranging for excursions to the great London Exhibition of 1851. The Paris Exposition of 1855 gave him the first opportunity to conduct a party to the Continent, and so rapidly did the business increase that the number of passengers carried under the auspices of the firm reached 70,000 during the Paris Exposition of 1878. His first excursion to America was organized in 1866, the same year in which he embraced Italy within the range of his work. His great triumph, however, was when the firm were called upon to convey the army for the relief of Gordon up the Nile. How large the contract was may be appreciated from the fact that there were conveyed about 11,000 English and 7000 Egyptian troops, about 130,000 tons of stores and raw material, and that there were carried down the river to Cairo at the same time about 50,000 tons of cereals collected in lieu of taxes for the Finance Department.

#### A New German Battleship.

The new German warship Kurfurst Friedrich Wilhelm, recently launched at Wilhelmshafen, is the first of four battleships now being built for the German Navy. The other three are being constructed by contractors, two at Stettin and one at Kiel, but neither of them is yet launched. In fact, they are not nearly so far advanced as the one being built at the Government's works. The Kurfurst Friedrich Wilhelm is built of steel throughout, of German manufacture, and everything about the ship, excepting only the anchor-hoisting engine, is of German material. The stem is of three pieces of cast steel, of which the middle one weighs 33,000 pounds. She is 380½ feet in length, draws 24½ feet, and is of 10,000 tons displacement. The ship has peculiar but graceful outlines, with sides having a deep tumble home amidships and a flaring bow. She is built on the longitudinal bracket system, has a double bottom and 120 water-tight compartments. The armor consists of a continuous belt of compounded steel armor 15½ inches thick, on a teak backing. The width of the belt is nearly uniform throughout, and it is worked up against the ram, thus materially stiffening it. Her main armament consists of six 11 inch breech loading rifles, in pairs, in three turrets; six 4.13 inch Krupp rapid firing guns, built on an entirely new system, in broadside and protected by light armor; eight 3.43 inch guns, disposed chiefly for a raking fire ahead or astern; two rapid-firing guns in the military tops, and a number of revolving cannon and torpedo outfit. The boilers, engines and magazines are placed below a steel turtle-back protective deck, which descends below the water line of the vessel. The other three vessels will be like this one, and each is designed for a 15-knots speed.

It is now tolerably certain that the preliminary meeting for increasing the effectiveness of the various commercial organizations of the State by the formation of a central association will be held in Rochester some time next month. The name of the central organization will be the New

York State Board of Trade, but beyond that no definite arrangements have been made.

#### Changes in Rail Practice.

The *Railroad Gazette* has made some inquiries among rail makers to ascertain somewhat definitely the tendency in rail practice in three particulars—weight of rail, carbon and section. Every one is saying that rails are getting heavier and harder; and it is supposed that the reports of the Committee on Rails and Wheels of the American Society of Civil Engineers have modified the prevailing section. The information collected by our contemporary confirms the first two opinions, but does not indicate much perceptible influence on the section from the committee's report. Specifically, the average weight of section rolled by one mill was 63.5 pounds in 1890 and 65 pounds in 1891. Another mill will probably average 70 pounds this year. In another case the greater part of the rails rolled for the last six months weigh 60, 70, 75, 80, 90 and 95 pounds per yard. We have no statement of the average weight of rails rolled by this mill in 1890, but the sections cited run up into unusually heavy weights. Another mill reports the average weights of rails above 50 pounds as follows:

	Pounds per yard.
1889.....	63.75
1890.....	66.85
1891.....	66.79

Still another company reports the average of those rails above 50 pounds per yard as 68.47 pounds. It must be remembered that in recent years the mileage of new road built has been small. This would naturally raise the average weight of rails, for comparatively light sections would be used for long new lines, while the main lines of established traffic are increasing their weights.

With regard to the percentage of carbon, one company reports a tendency in specifications toward higher carbons, and the tendency of that company, when no specifications are made, is in the same direction. Their usual practice is: For 60-pound rails, 40 to 45 carbon; 70-pound rails, 45 to 50 carbon; 80 pound rails, 45 to 55, and in some cases 50 to 60, with a tendency to an average above 55 carbon. Another mill reports a decided tendency among the more progressive roads to higher carbon rails. The average of that mill is 50 to 60. This is a fair summing up of the practice so far as we can ascertain. One large maker says that the recommendations of the American Society's committee have done some good. There is a tendency among engineers to modify their sections toward the recommendations of the committee, but "much remains to be done in this way still." Another maker says that owing to the depression in the rail trade he has seen no effect from the committee's recommendation. This is quite probable so far as the specific recommendations go as to the details of radii, &c., but there can be no doubt, we think, that the general principle of comparatively light and broad heads has made progress, and that that movement dates back further than the report of the committee.

Among the commodities added to the free list of the new Mexican tariff which goes into effect November 1 are type metal in bars, iron stone hammers, iron barrels, perforated sheet iron, asbestos crucibles, millstones, insulators for telegraph and telephone lines, silk cloth for flour sieves, printed sheets for bank notes, maps, wall pictures for schools, drawing courses, copying apparatus, electric batteries, miners' lamps, scientific apparatus, lightning rods, collections of coins, miners' caps and hats.

## WORLD'S FAIR NOTES.

#### Progress in Construction.

Contracts for the construction of Forestry Building were let on Thursday, as follows: Carpentry work, Bailey, Koerney & Co. of Henderson, Ky, \$58,398; skylight, James A. Miller & Bros. of Chicago, \$6900; painting and glazing, Riley & Barker, \$5193; lathing and Plastering, Joseph Eastman, \$571. It will be one of the novel buildings of the Fair. In size it will be 200 x 500 feet, and in the center 60 feet high. Its exterior appearance will be as natural as unhewn wood can make it. The principal features of its architecture are the pillars which support the roof. These pillars will be natural tree trunks, from 16 to 22 inches in diameter and 25 feet long. Each State in the Union will contribute three trunks, and all of them will be used. The sides of the building, between the supporting trunk pillars, will be filled in with slabs with the bark off. The roof will be a thatch of straw. The window frames will be treated in the same rustic manner as the balance of the building. The main entrances will be elaborately treated in different kinds of wood, the material and workmanship being contributed by the wood-workers of the world.

The building will be used for the exhibition of forest products in general. It will contain logs and sections of trees, worked lumber in the form of shingles, flooring, casing, &c. There will also be shown here dye woods and barks, mosses, galls, abnormal woody products, lichens, vegetable substances used for bedding and upholstery, gums, resins, vegetable ivory, cocoanut shells, gourds, wood pulp, rattan, willow ware and wooden ware generally, such as pails, tubs, brooms, &c.

The revised plans for the Manufactures Building make it, according to World's Fair authorities, the greatest building ever erected. It will have under one roof about 40 acres of space. The original plan for the building called for a rectangular structure consisting of two halls 1688 feet long, 200 feet wide, connected by two halls of similar widths at the ends and surrounding two interior courts. According to the present plans the interior courts have been abolished and the entire area, 800 x 1688 feet, will be under one roof. Instead of the courts there will now run a central span through the building approximately 400 feet wide and 1688 feet long. These changes were made because of the necessity for more room.

The Chief of Construction and his aids at headquarters are preparing work for the winter. The chief has been granted permission to advertise for bids for the construction of 450,000 square feet of sidewalks. In a general way these sidewalks on the Exposition grounds are to be 40 feet wide. Every manufacturer of sidewalks will be given a chance to compete for the construction of the walks.

Contractor Chapman of the Mines and Mining Building has announced that he would have that structure completed by January, 1892. This is slightly in advance of the time agreed upon in the contract. Mr. Chapman raised last week over the Mines and Mining Building the first United States flag that has been seen in the park. It was 200 feet above the ground and floated from a staff on a roof truss. On the 20th the first flag of a foreign nation thus far raised on the World's Fair grounds was floated to the breeze in Midway Plaisance. The occasion was the rearing of a flagstaff near Fifty-ninth street, the site of a Turkish exhibit, which will be placed there by Samuel Levy of Constantinople. About 600 Turkish residents of Chicago were on the grounds when the star and crescent of Abdul



Hamid, the Sultan of Turkey, was raised. Charles Henrotin, the Turkish Consul resident at Chicago, made a speech, as did Mr. Levy, and a number of others of those present. The World's Fair Commission of Pennsylvania have decided to construct a building to be composed of steel, iron, glass, and lumber, with a slate or tin roof, and of Pennsylvania material so far as practicable. The guaranteed cost of the building is not to exceed \$75,000, and it will be used as headquarters and as a place for the exhibition of peculiarly State matters.

The sites for 16 State World's Fair buildings were approved last week by the Committee on Grounds and Buildings. The sites voted upon favorably were those of Connecticut, Delaware, Kansas, Maine, Maryland, Colorado, Michigan, New Hampshire, New Jersey, North Carolina, Ohio, Oregon, South Dakota, Vermont, West Virginia and Washington. These locations had been previously selected by representatives of the several States, and the committee simply confirmed the indicated choice of the representatives.

Chief Burnham has been given authority to contract for 6444 feet of 2½-inch iron pipe and 45 hydrants, to complete the water service on the Wooded Island.

Authority was issued for a contract with G. W. G. Ferris & Co. and Estrader, Kennan & Gray of Pittsburgh to inspect the iron for all buildings.

#### The Electric Light and Power System.

The Committee on Electricity has taken hold of its work with unusual vigor. In addition to planning for a system of electric lighting and ornamentation, it has adopted a scheme of tunnels for conveying the electric wires throughout the grounds and buildings.

Electrical Engineer Sargent has prepared the scheme which was adopted by the committee. The generating point of electric light and power is to be in the south side of Machinery Hall. Here will be massed the great dynamos and boilers, and from this building will run five groups of wires ranged along a rack on the south side of the building. Two groups will run in a tunnel system and the other three be carried under the girders of the electric elevated intramural road, which is to run along the north, west and south sides of the grounds.

The first group will run north from Machinery Hall, across the plaza to near the Electricity Building, east across the canal, north through the Manufactures and Government Buildings to the Fisheries Building.

The second group will run from Machinery Hall north to the Electricity Building; a branch will be run into the Mines Building, and altogether this second group will furnish light and power for the Electricity, Mines and Administration Buildings and Wooded Island.

The third group will be carried under the girders of the electric road and will supply all the territory not covered by groups one and two. It will supply the light and power for the Transportation Service, Horticultural, and Woman's Building and all the State and Foreign Buildings in the north end of Jackson Park, as well as the Art Palace and the Midway Plaisance, including the adjacent territory.

The fourth group will supply Machinery Hall and its annex and the west portion of the live stock exhibit.

The fifth group will supply the Agricultural Hall and its annex, the Forestry, Dairy, Live Stock and Saw Mill Buildings.

The system of tunnels will be 6 feet wide and 6 feet high beginning at Machinery Hall, and be capable of carrying 150 wires strung on glass insulators. A passageway 2 feet wide will be reserved in the middle of the tunnel for repair men, and throughout they will be lighted by

incandescent lamps. Of course, near the extremities the tunnels will be smaller. The length of the system will be about four-fifths of one mile, and the tunnels may be constructed of either brick or concrete and at an estimated cost of \$50,000. A considerable saving will be effected where the wires run under the building. Here a fire proof vault will be constructed under the floor. The tunnels may be tapped wherever desired to furnish service for fountains or lights on the ground.

The plan of carrying three groups of the wires under the girders of the proposed intramural railway seems to indicate that a double track system will be desirable. This, if true, appears to exclude a single track elevated railway, which has heretofore been favorably considered.

#### Custom House Regulations.

Collector Clark returned on the 21st from Washington, where he submitted to the Secretary of the Treasury plans for the custom house regulations during the World's Fair. Mr. Clark said the Treasury officials are now considering the recommendations submitted by him, and Special Agent Tindall will probably be sent to Chicago to submit the entire custom house plan to the World's Fair officials. Every move, Mr. Clark says, will be made solely for the benefit of exhibitors, and the work of getting the exhibits into the fair will be made as easy as possible under existing tariff regulations.

#### Visitors to the Grounds.

Officers of the exposition escorted Sir Henry Wood, James Dredge, Herr Wermuth and Dr. Emil Meyer, the English, German and Danish commissioners, through the fair grounds last week for the purpose of showing them what progress had been made. The envoys leave Chicago this week for a brief tour through the East, and will sail from New York by the steamer Majestic, October 7. Regarding the exposition, Dr. Emil Meyer said: "I am surprised and delighted with the site selected for the exposition and the progress made in the work. It is going to be a most successful fair, and Denmark will be well represented." Sir Henry Wood said: "There could not have been selected a more beautiful stretch of territory for the purpose than the site of the World's Columbian Exposition. England will be well represented in the matter of exhibits, and the Commission and country at large will labor to eclipse any exhibition we have ever made before. The progress made in preparing the grounds and exposition buildings is in every way satisfactory, neither ahead of time nor backward, and there is every assurance that all preparations will be completed and everything in readiness when the time comes for opening the exposition." Herr Wermuth was enthusiastic. "It is magnificent," he said; "the buildings, the grounds, the lagoons, which remind one so much of Venice, and make such a delightful passageway between different portions of the grounds. Will the fair be a success? Undoubtedly. The manner in which the work is progressing and the enthusiastic endeavor on all sides to make it a credit to this great country will not fail of result, but will make the World's Columbian Exposition the grandest fair ever held. It is on such a magnificent scale that there is no comparison between it and the Paris Exposition." James Dredge was greatly pleased with the general plan of the grounds, the location and great architectural beauty of the buildings. Mr. Dredge said: "The foundations of the buildings are stanch, and are in every way sufficient for the purposes for which they were constructed."

#### New York True Blue.

A few days ago the department of publicity and promotion sent letters to many

of the large retail stores and to the leading manufacturers and importers of New York State and vicinity, asking them whether they were sufficiently interested in the World's Columbian Exposition to assist it by displaying in their places of business the lithographs of Machinery Hall, issued by the department. Particular care was also taken to make this proposition to the largest advertisers in the New York papers. Replies have been received from nearly every firm to which letters were written, and without exception these firms agree to display the lithograph, and with very few exceptions express in the warmest manner their interest in the exposition and their hope that it will be a great success. In at least 100 of these replies the statement is made that the business men of New York understand and consider the exposition to be a National enterprise, and that the credit of the whole country is involved in making it a success. In scores of these communications the hope is expressed that the exposition will be "as great a success as the great patriotism, energy, munificence and liberality of Chicago deserve."

#### Estimated Expenses.

E. T. Jeffery, chairman of the Grounds and Buildings Committee of the exposition, made the following estimate of necessary exposition expenses for submission to the recent meeting of the National Commission:

Buildings.....	\$7,295,000
Grading and filling.....	450,000
Landscape.....	323,490
Viaducts and bridges.....	125,000
Piers.....	70,000
Waterway improvements.....	225,000
Water supply and sewerage.....	600,000
Railways.....	500,000
Steam plant.....	800,000
Electricity.....	1,500,000
Statuary on buildings.....	100,000
Vases, lamps and posts.....	50,000
Fuel and light during construction..	20,000
Seating.....	8,000
World's Congress.....	200,000
Improvement of lake front.....	200,000
General expenses of Construction Department.....	500,000
Organization and administration....	3,308,563
Police, watchmen and other expenses.	1,550,000
Total.....	\$17,825,453

#### Brevities.

At a recent meeting of the Association of Civil Engineers of the City of Mexico it was decided by unanimous vote to visit Chicago in a body in 1893. The Minister of Public Works is a member of the association.

The chief of construction has been authorized to ask for bids for the construction of the Art Palace in Jackson Park. He will do so at once, and the last of the great fair buildings will be in the hands of the contractors. The Art Building has been delayed owing to the long squabble over the Lake Front.

An Italian engineer has written Chief Fearn of the Department of Foreign Affairs to know whether a proposition to construct a pneumatic tube between New York and Chicago would be entertained. Through this tube he would send visitors to the fair. He thinks a company with \$10,000,000 could be organized.

The Associated Factory Mutual Insurance Companies of the United States have designated Tobin bronze, manufactured by the Ansonia Brass and Copper Company, in their specifications as the standard for piston rods for steam fire pumps.

The managers of the Mabel, Spearman, Douglas, Sharpville and Claire furnaces, in Shenango Valley, Pa., have announced their determination to bank their furnaces rather than submit to the 10 and 15 cents advance in wages for which the men recently struck.

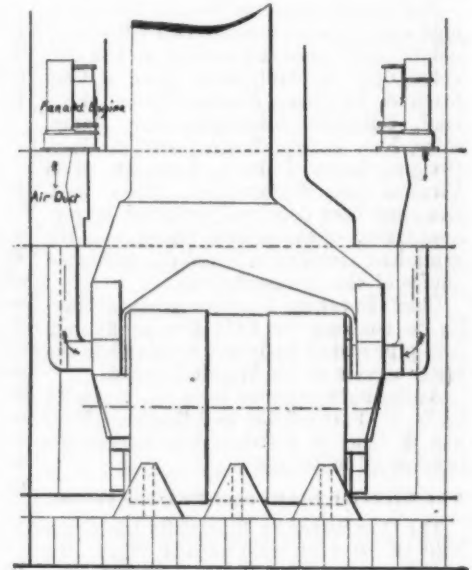
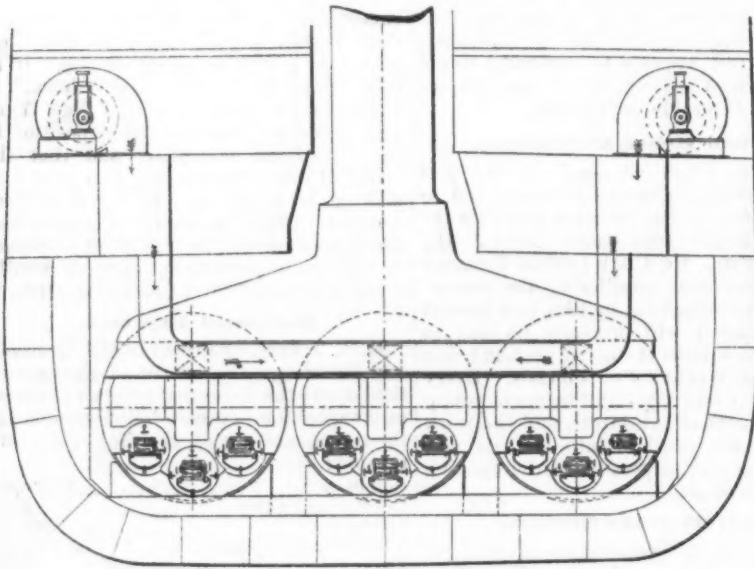
### Forced Draft Arrangement on the Steamship City of Paris.

From an article in *Engineering*, describing the repairs and alterations made in the machinery of the City of Paris since the accident to that vessel, March 23, 1890, we take the following account of the Howden closed ash-pit system:

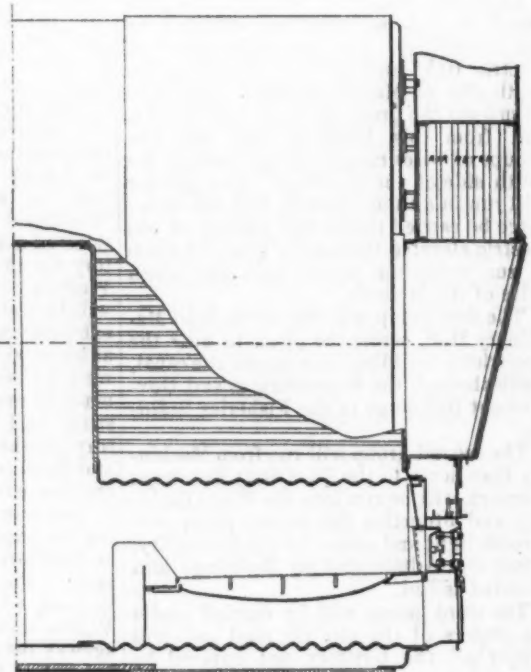
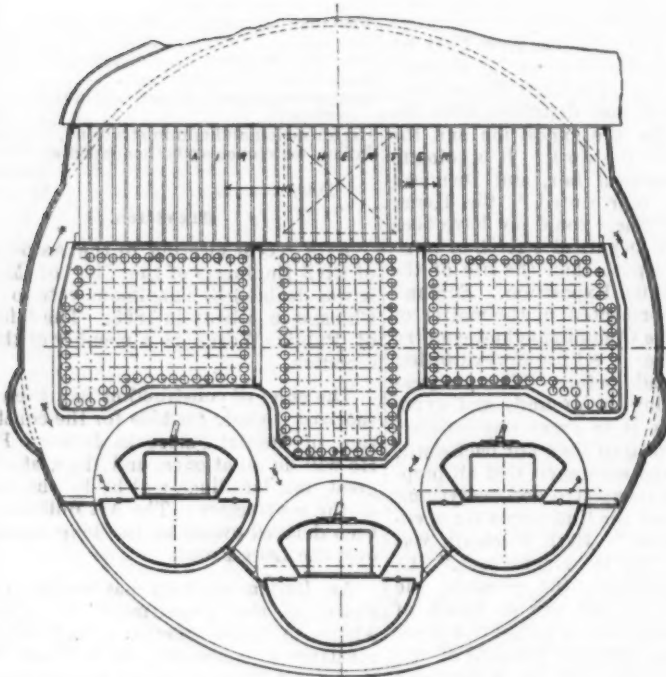
An important alteration has been made in connection with the generation of steam.

The diameter of each boiler is 15½ feet and the length 19 feet, there being in all 54 furnaces of a mean diameter of 3 feet 10 inches. The tubes are 7 feet 6 inches long, 2½ inches in diameter, and as in each boiler there are 1056 tubes, the heating surface totals 50,040 square feet. Mr. Howden has shortened the fire bars by 9 inches, and has thereby reduced the grate area from 1293 to 1026 square feet. At the sides, too, Mr. Howden has put plates fitting closely into the corrugations of the flue.

couple of fans, and one fan in the case of the forward and after chambers, making 12 in all, so that from each side a current of air is sent down, and passes along the front of each series of three boilers placed athwartship. The fans are by B. F. Sturtevant of Boston. They are each 6 feet in diameter, and each is driven up to a maximum speed of 430 revolutions by a double engine by the same maker. The cylinders are 7 inches in diameter and have a stroke of 5 inches. The distribution of



Figs. 1 and 2.—Front and Side Elevations, Showing Air Pipes.



Figs. 3 and 4.—Front and Side Elevations, Showing Air Heater.

### HOWDEN'S FORCED DRAFT ARRANGEMENT ON THE S. S. CITY OF PARIS.

Formerly the nine boilers were worked under the closed stoke hold system of forced draft, but during the time the vessel was laid aside it was superseded by Howden's system. Extensive structural alterations were necessary, as this latter arrangement does not require a closed stoke hold and necessitates a different type of furnace door and additional appliances on the front of each boiler. It may be stated at the outset that there are nine double-ended boilers arranged in triplets in separate water tight compartments.

In describing the system of forced draft it will perhaps be better to begin with the fans, following the course of current of air to the furnace. As in the original arrangement, the fans are placed on the main deck with square trunks, which are continued above the promenade deck, there being there constructed a large square chamber, having a covering on hinges to admit the entrance of a draft when the vessel is steaming. There are four of these chambers on each side of the ship. At the foot of each there are a

steam to both cylinders is effected by a single piston valve placed at the side. The cranks are placed diametrically opposite, which enables the valve to send the steam in at the bottom of the one cylinder and at the top of the other alternately. The entire engine is inclosed, to prevent the bearings being affected by dust, but all parts are accessible when the door is opened. The regulation of the engine is by a shaft governor forming part of one of the pulleys, and acting through the eccentric to change the throw of the valve



and vary the cut off from 0 to  $\frac{3}{4}$  stroke. The engines, of course, are coupled direct to the fan shafts. Each fan discharges downward through a square trunk between the main and lower deck, from the bottom of which a rectangular air pipe is led downward, and thence along the front of the uptake of the boilers immediately above the top of the boiler tubes. There is a fan at each side of the ship, as we have already indicated, and they blow the one into the port and the other into the starboard end of the rectangular pipe, Figs. 1 and 2.

As is well known, this system of forced draft has a series of air-heating iron tubes placed vertically at the base of the uptake, the bottom tube plate of the air heater containing these tubes being only 1 inch or 2 inches above the upper row of the boiler tubes, Figs. 3 and 4. The tubes in the heaters in the City of Paris are 3 inches in diameter, and are each 34 inches long. This air heater extends nearly across the whole width of the front of the boiler above the tubes, Fig. 3. The rectangular air pipe passes along immediately in front of these air heaters and is continuous across the three boilers, Figs. 1 and 2. There is a rectangular opening at the vertical center line of each of the boilers, to allow the forced draft to pass from the main pipe into the air heater, Fig. 1. After passing through among the tubes the heated air flows down at each side of the outer smoke boxes to an air reservoir which encircles the upper half of the furnace front, occupying the whole space upward to the bottom of the smoke boxes, Figs. 3 and 4. This air reservoir is quite separated from the smoke boxes by an air-tight sheet-iron casing. From this reservoir the air passes to the furnaces, part going into the ash pit and part into the flue above the fire, the supply to each place being regulated by separate valves.

There are two valves admitting the air to each ash pit, placed on each side of the furnace at the bottom of the reservoir. The valve for admitting the air above the fires slides on a flat plate separating the air reservoir above from the space between the outer and inner furnace doors, Fig. 4. These swing together on one hinge, and when the door is shut the air passes between the outer and inner doors, maintaining a pressure in the space as well as around the interior of the furnace front. From this pressure space between the doors the air is admitted to the furnace through a number of air-distributing boxes, perforated on the side against the fire with small holes,  $\frac{3}{8}$  inch in diameter, of a given aggregate area, according to the required rate of combustion. The air passes on to the surface of the fuel under combustion. The system, it will be seen, preserves the cast-iron furnace fronts from injury by the heat of the fires. Each ash pit has a closed door, and the air pressure is maintained underneath the bars according to the revolutions of the fans, or the greater or less opening of the valves admitting air. These valves are throttle valves each worked on a central axis in the usual way, but the disk being square. The spaces between the furnace bars are  $\frac{3}{8}$  inch wide, and the air when passing through meets the air from the upper valve.

The temperature of the air in the reservoir is generally about 210°, and the pressure, of course, varies according to the speed at which the fans are run. On the trial on the measured mile in the Firth of Clyde the fans only worked up to 370 revolutions, although early in the following morning they attained a speed of 430. The pressure at the former speed was  $\frac{1}{2}$  inches in the reservoir and  $\frac{3}{8}$  inch above the fire and in the ash pit.

Andrew Carnegie will sail for the United States on October 28.

### A Natural Gas Suit.

At Pittsburgh on Monday, September 28, Carnegie, Phipps & Co., Limited, Andrew Carnegie and H. C. Frick petitioned the courts for an injunction to restrain the Philadelphia Natural Gas Company of that city from shutting off the supply of gas furnished to their various mills in Pittsburgh as the defendant company proposes to do on October 1. They also ask for damage for inconvenience and a loss caused by a lack of gas during the last 23 months. A preliminary injunction was granted, and a hearing in the case will take place on Friday, October 2. In the bill submitted to the court, the plaintiffs state that in 1884 Andrew Carnegie and H. C. Frick, in conjunction with their associates, members of Carnegie Bros. & Co., Limited, made certain contracts with Messrs. Verner, McCargo and others to furnish all the capital necessary to construct natural gas lines to fully supply gas for the Upper Union Mills, the iron mills of Wilson, Walker & Co., and two Lucy furnaces, and the works of the Keystone Bridge Company, through what was to be known as the Allegheny Natural Gas Company.

The defendant company on learning of this arrangement approached the plaintiffs some time in the latter part of 1884 with a view of acquiring the right and property of the Allegheny Natural Gas Company, and securing the cancellation of their agreements with the projectors of the Allegheny Natural Gas Company, and more particularly with a view of getting financial assistance and a contract to furnish *inter alia* the works named with natural gas. The result of these negotiations was that a contract dated December 8, 1884, was drawn up, wherein the plaintiffs agreed to procure the cancellation of the agreements with David, McCargo and M. S. Verner. They also agreed to subscribe and pay for 4000 shares of the proposed increase of capital stock of the defendant company to enable it to prosecute its work and to get in a position to furnish natural gas. Defendant company agreed to furnish perpetually natural gas sufficient to supply the above named firms at 75 per cent. of the price of fuel to be displaced by gas. The plaintiffs had gone to considerable expense to adapt all the works for the use of natural gas as fuel. Under the said contract the defendant began and is now furnishing the gas, but not in sufficient quantities to supply the mills. In January, 1886, the members of Carnegie Bros. & Co., Limited, formed the partnership of Carnegie, Phipps & Co., Limited, to operate *inter alia* the works named. Since that time Carnegie, Phipps & Co., Limited, with the consent of the defendant, have assumed all the obligations of the contract.

On July 23 of this year Carnegie, Phipps & Co., Limited, received a letter from the Philadelphia Natural Gas Company, notifying them that on October 1 all natural gas heretofore supplied by the Philadelphia Natural Gas Company would be cut off, owing to the fact that the company had not sufficient natural gas to continue supplying them. The plaintiffs charge that it is not true that it is impossible for the Philadelphia Natural Gas Company to continue supplying them with natural gas, but that it is the intention of the company to cut off their supply of gas and sell it to others at a higher figure. The plaintiffs state that they have made large contracts for the manufacture and delivery of material, based upon the right to obtain fuel from the defendant company. The last claim is that the defendant company owns large tracts of undeveloped gas lands, and is now selling and delivering gas in greater quantities at present than when the contract for the

supply of the plaintiffs' works was made. The plaintiffs pray for the following: That it be declared that the said defendant company has no right to rescind and terminate its contract. That by preliminary injunction, said defendant company shall be restrained from cutting off the supply of natural gas. That the defendant company be decreed to furnish a sufficient supply of gas. That the damages sustained by reason of the neglect and refusal of the defendant company to supply sufficient gas heretofore shall be ascertained and a decree made for the payment of the said sum to the plaintiffs.

The following is a memorandum of the agreement made December 8, 1884, between the Philadelphia Company, party of the first part, and H. C. Frick and Andrew Carnegie, party of the second part.

#### Witnesseth as follows:

1. Said parties of the second part hereby agree to procure the cancellation and avoidance of certain agreements between Carnegie Bros. & Co., Limited, David McCargo and M. S. Verner, dated February 29, 1884, so far as said Carnegie Bros. & Co., Limited, are concerned, and to secure said David McCargo's agreement to said cancellation on his part.
2. Said parties of the second part shall subscribe for 4000 shares of the capital stock of the Philadelphia company and pay therefor on subscribing 20 per cent. cash and the balance as called for by said company.

#### AGREEMENT TO FURNISH THE GAS.

3. Said party of the first part shall furnish to said parties of the second part, and said parties of the second part shall take and pay for, natural gas sufficient to supply the Union Iron Mills, the Keystone Bridge Company, the Lucy Furnace Company and Wilson, Walker & Co., in the city of Pittsburgh, at the following prices, viz: Upon such terms as shall be equitably the same as those prescribed in said agreement between Carnegie Bros. & Co., Limited, David McCargo and M. S. Verner of February 29, 1884, aforesaid.

Said terms shall be fixed finally by H. C. Frick and George Westinghouse, Jr., and in the event of their failure to agree, then by A. W. Mellon.

4. Said parties of the second part shall not sell said stock, or any part thereof, to any other person than the Philadelphia Company until said company shall first have refused to buy the same at such price as any other party shall *bona fide* offer for.

5. Said agreement as to its terms referred to in Paragraph 3 shall be reduced to a certainty not later than December 15, 1884, and stock then subscribed and paid for as above.

6. This agreement is made by H. C. Frick and Andrew Carnegie in behalf of their associates (members of Carnegie Brothers & Co., Limited), and upon a sufficient consideration now acknowledged to have been received.

Witness our hands and seals the day and year aforesaid.

THE PHILADELPHIA COMPANY,  
By GEO. WESTINGHOUSE, President.  
H. C. FRICK.

Attest—JOHN CALDWELL, Treasurer.

#### HOW THE PRICE WAS FIXED.

We, the subscribers to the above agreement, do hereby agree that the terms as to price for gas referred to in Paragraph 3, which was to be fixed finally by H. C. Frick, George Westinghouse, Jr., and A. W. Mellon, shall be 75 per cent. of price of fuel displaced by gas, and at all times as low as charged by any other party or parties.

Witness our hands and seals this 10th day of December, 1884.

THE PHILADELPHIA COMPANY,  
By GEO. WESTINGHOUSE, Jr., Pres't.  
H. C. FRICK.

Attest—JOHN CALDWELL, Treas.

The outcome of this suit will be watched with considerable interest by other consumers of natural gas, and particularly by manufacturing concerns whose supply has recently been shut off.

The American Pig Iron Storage Warrant Company have recently established yards at the Rockbridge Furnace, Goshen Bridge, Va., Citico Furnace, Chattanooga, and Tallapoosa Furnace, Tallapoosa, Ga. The company have now established yards at 66 furnaces, whose nominal capacity aggregates 1,996,500 tons.

# The Iron Age

New York, Thursday, October 1, 1891.

DAVID WILLIAMS, - - - PUBLISHER AND PROPRIETOR.  
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## The Business Outlook.

It has been well said that the happenings in Wall street during the past week, have not lessened by one bushel our crops of grain, or added a pound of bread to the stock upon which the millions in Europe may draw. On the contrary, the past week has added daily very large sums to the wealth of the country by maturing corn, the only cereal which was still in danger from adverse conditions. It is estimated that the total value of the wheat, corn, oat and cotton crops will be \$2,000,000,000. That in itself is the basis for general prosperity. But it must be borne in mind that the proportion of profit to the farmer is greater than it has been for many years. Large crops in themselves are not necessarily the highest boon to the agriculturist, though they do assure cheap food to the industrial population. But when large yields are coupled with round prices, then the balance which remains in the farmer's pockets is exceptionally large. This country to-day is in the position, practically, of drawing upon the accumulated earnings of Europe. Our manufacturing interests will share in the prosperity to an extent far outweighing the slight increase in the cost of bread-stuffs.

We do not propose to go into the much-discussed question what motives actuated those who brought about the reaction in the stock market. We must deal alone with the effects which the movement is likely to have upon the industries in which our readers are engaged. Those whose products go largely or wholly into the hands of farmers need not give the matter much consideration. The demands upon them will come heavily in spite of any capers which Wall street magnates may indulge in. Those who handle such goods, the retailers and the jobbers, will seize every opportunity for cheap purchases. They are in little danger of overbuying, except in those cases where local conditions have been exceptionally adverse to the agriculturists.

It is somewhat different with the industries which largely depend upon the railroad demand or are indirectly influenced by it. To some extent the apparent opposition of great speculative interests to the rapid advance in stocks must shake the confidence of many who have been considering the expediency of purchasing for a rise. It is probable, too, that of the more venturesome who had already operated, many found profits seriously curtailed, while some may have been crippled. How-

ever vigorous may be the protests of commission houses that all is well again, it seems probable that some time must elapse before confidence and courage are again restored and legitimate causes begin to operate fully.

The incidents of the last week will have their effect in retarding the advent of a general rise in prices. But they cannot stay it. It will be the part of wisdom on the part of manufacturers, dealers and merchants to seize every opportunity to purchase supplies and raw materials whenever a good opportunity offers. Great natural causes point unmistakably in the one direction of general prosperity and widespread activity in trade.

## Delivery of Manufactured Goods.

Jobbers in Chicago and St. Louis are considerably exercised over the growing tendency of manufacturers to deliver goods at points further West at the same price as if delivered in those cities. The objection to such a practice seems to be well founded, and it would appear that a plain presentation of the facts in the case must lead to a speedy correction of the trouble. It is plainly apparent that manufacturers who make an even price on goods delivered at points 400 to 500 miles distant from one another are discriminating against the jobbers located nearest the factory. The claim may be made that all buyers are thus put on an even footing, but this is not correct. For instance, certain articles of hardware may cost 5 per cent. more delivered at St. Paul or Kansas City than delivered in Chicago. If a manufacturer delivers them at St. Paul or Kansas City at the same price as though delivered in Chicago, the jobbers in the latter city are discriminated against to the extent of 5 per cent. in entering Western territory. To sell goods on even terms with their Western competitors they are obliged to reduce their prices just that much, and in these days of close margins, that means either a total absence of profits or an actual loss.

In presenting this condition of affairs there is no desire on our part to unduly favor the Chicago and St. Louis jobbing interests. Fair treatment only is asked for. The Chicago and St. Louis jobbers would appear to be entitled to an abatement on the price made to Western jobbers of the difference in freight. This would put all the jobbing houses on an even footing so far as cost of goods is concerned, and the control of the trade would then depend upon other considerations which each house could bring to bear upon customers. The inequality in costs, however, which prevails at present operates as a very serious handicap to Chicago and St. Louis jobbers in marketing certain lines of goods, and practically restricts them to local territory. This is certainly not intended by the manufacturers.

The jobbers further West are not to be blamed for desiring to retain the advantages which they have secured, but the question comes up as to how long they will enjoy such advantages. If they are really

entitled, on any ground whatever, to be favored with equal prices on delivered goods with Chicago and St. Louis, could not Denver houses, with perfect propriety, claim to be put on an even footing with them? If Denver, why not Salt Lake City and other trading centers in Utah and Montana? Where would the claim for equal prices stop? The Pacific Ocean would seem to be the only limit. Every Western jobber would then find his territory restricted to the immediate vicinity of his own city. It may be said that no manufacturer would deliver goods so far West, because freight rates are too high, but that does not weaken the force of the argument. The points to which delivery is now made involve the payment of rather high freight rates, and the question is raised whether the Chicago and St. Louis jobbers are not charged too much for the goods they purchase if manufacturers can afford to deliver 500 miles further West for the same price.

The true way to adjust conflicting interests of this kind is for manufacturers to deliver all goods f.o.b. factory, and let purchasers pay the freight to their respective cities. All would then be placed on an even footing in the matter of first cost. Manufacturers would be relieved from the responsibility which they are now assuming of localizing the trade of the jobbers of any section, and if they found jobbers' prices on their goods were not maintained they would not have the blame for it laid on their own shoulders.

## Silver to the Rear.

An alarmist view of the silver coinage question in America has been given by Robert Giffen, a statistician of some repute in London, which has attracted universal attention, and none the less because the predictions made seem to have been based on a wide misapprehension of the facts. He represents that the United States "has become overloaded with paper currency" and assumes that the next Congress is destined to repeat and perpetuate the "gross legislative mistake" which gave the silver laws their origin. The fact is that not only the drift of public sentiment in this country but the current of events as affecting the currency question alike tend in a direction quite the reverse of what is affirmed by the London observer respecting the alleged coming crisis in this country. First and most obvious among positive indications is the heavy reflux of gold from Europe, already equal to about \$10,000,000 afloat, and which must inevitably strengthen the gold basis of valuation as against the encroachments of silver. Mr. Giffen himself concedes that there will be "a heavy drain of gold for several months to come" from Europe to the United States. This phenomenon becomes more pronounced from day to day, keeping pace with the increasing purchases abroad of American securities—a movement which is likely to acquire force and volume, should the signs of coming disturbance in Europe become more threatening.



Of highest significance, however, as showing the condemnation of the silver heresy by American public opinion are the utterances of the recognized leading oracles of both political parties, both in speeches and platforms. John Sherman and Roger Q. Mills, in Ohio, speaking in behalf of the great political organizations which they represent respectively, are essentially of one mind touching the silver question. When a man like Mr. Mills deliberately abandons the free-silver policy which he so long and earnestly advocated, and at this later day, in a speech delivered at Mansfield, Ohio, notifies his party that the free-coinage issue must be eliminated from the campaign if they would escape the consequences of defeat, the recantation and public avowal become deeply significant. None can doubt that the preponderance of public sentiment is shaping itself more decidedly in favor of honest money. To the same effect is the silver plank in the platform just adopted by the convention at Saratoga, namely: "We are against the coinage of a silver dollar which is not of the intrinsic value of any other dollar of the United States." Clearly enough, free silver has gone to the rear.

#### Steel vs. Iron.

It is the general impression in trade circles that the quality of the manufactured iron now made is improving. Consumers are more exacting in their requirements, the practice of testing has grown quite general, and greater intelligence now prevails among all classes of manufacturers. More attention is paid to the scientific features of the business. Chemical formulas are no longer regarded with contempt. Raw materials are purchased with some discrimination, the effects of different fuels are carefully noted, and rule-of-thumb has to a great extent given way to the application of exact knowledge. The gradual disappearance of old iron rails from rolling mill stock piles is also a matter of no small consideration in this question. As long as they were plentiful and cheap there was a constant temptation to use them, as their conversion into other forms of iron was so easy and comparatively so inexpensive. The passing away of the old-rail era together with the growth of scientific knowledge relative to iron making could not fail to effect a marked improvement.

This improvement has been especially noticeable in the manufacture of bar iron in the West. For example, common bar iron of Western make is no longer the despised article that it was but a few years since. At that time a storm of indignation was evoked when the charge was made that a Chicago fire-escape manufacturer was using common bar iron in building structures upon whose strength many lives might depend. The common bar iron now made easily meets the requirements of agricultural implement manufacturers and has further been known to endure the exacting tests of the most rigid railroad inspectors.

Notwithstanding this array of argument, apparently proving that the quality of the iron now made is better than ever, it is the opinion of experts that the limit of improvement has been reached, unless consumers are willing to pay greatly enhanced prices. Further improvement in quality is to be gained by reworking, thus making the product more homogeneous, but decidedly more expensive. In this event, however, the consumer naturally turns to steel, which will meet his requirements at a less price. The quality of steel is shown to be steadily improving, and, unlike iron, it has a free field which it will enjoy until some other metal or alloy is found possessing greater merits and is available at a reasonable price. The improvement in the quality of the steel made in the past five years is very remarkable. No longer are complaints made of the mysterious cracking of steel plates, but steam boilers are now almost universally made of steel, and iron ships have completely given way to steel ones. The manufacture of reliable steel plates is no longer confined to one or two works in this country, in which the process almost seemed to be a trade secret, but there are upward of a dozen of them, all ready to meet the most severe specifications, which would be impossible of execution in iron except at very much higher cost.

In other branches of the steel trade the number of manufacturers is constantly increasing and the excellence of their product is a matter of wide comment. Who can make good thin steel sheets? was once a live question, but it has now almost changed into, who cannot make good thin steel sheets? In heavy forgings iron and steel have for some time been struggling for the mastery, and each has its advocates. The iron manufacturers say that they find the quality of the scrap now in the market so irregular that they can no longer depend upon it and they will only guarantee their work when made from reworked muck bar, which is necessarily expensive, and the result is that they are themselves turning to the use of steel. In fact, the inference seems to be unavoidable that steel is making greater headway than ever in all branches of trade in which reliability and excellence of quality are sought.

The case of Cox Brothers against the Lehigh Valley Railroad Company, who were charged before the Interstate Commerce Commissioners with discriminating against them unjustly in the transportation of coal, has reached another stage in the protracted litigation which has now continued three years. The case is of such importance that it is well to remember the material points at issue. The complainants were not fully sustained in their allegation that they were excluded from the tide-water markets by some advantage given to forwarders of bituminous coal. The Commissioners contended that the displacement of hard coal was due rather to new inventions and improved appliances, by which the costs of mining bituminous coal had been reduced. On the

other hand, the costs of mining anthracite have been maintained and increased. Despite this showing, the Commissioners recognized the validity of the complaint so far as to order a material reduction in anthracite tariffs. Unlike the Lehigh Valley Company, the individual coal operator, not being likewise a carrier, is unable to derive a profit from transportation. To regulate the conditions or methods of doing business in the particular here referred to lies beyond the jurisdiction of the Commission, but the practical effect of the dual relationship is equivalent to discrimination, and is so regarded. As was to have been expected, the Lehigh Valley Railroad Company do not take kindly to the adverse decision, and proceedings in the courts are liable to be long drawn out. In an appeal the defendants not only question the constitutionality of the law, but they raise the point that Congress has not the power to make rates for railroads; and furthermore, as a clincher, the company maintain that if Congress ever did have such power it has no constitutional right to delegate its powers. Thus far the business relations of the contestants continue much as before, Cox Brothers paying the freight charges demanded, but under protest.

#### The Proposed Chicago Iron Exchange.

We are in receipt of commendatory letters from members of the Chicago iron trade referring to the article on an iron exchange published in *The Iron Age* of September 17. The project appears to have met with very great favor. It is almost the universal opinion that such an institution is needed in Chicago, and that it would be found of great benefit to both buyer and seller. To a large part of the trade the announcement in *The Iron Age* was the first intimation they had that the establishment of an exchange was being discussed. The hearty approval with which the project has been received by them shows that the opportunity exists for carrying out a scheme of this kind. What is needed now is a little active work by a few men of the highest standing and widest acquaintance, whose lead the others will be apt to follow. Thus far there has been discussion only, with a general inclination to wait for somebody else to take a decisive step, either in calling a meeting of the trade, or circulating some document pledging specific support to such an enterprise. The most prominent men are, of course, the busiest, and they can hardly be expected to give their valuable time to building up a movement which would perhaps be more beneficial to others than to themselves. Many members of the trade, on the other hand, think it would be presumptuous in them to lead off in an attempt to bring the trade together. It rests with some one who has the requisite nerve and enthusiasm to take up the matter, and advance it from the merely initiatory stage of discussion to a point where it will receive either the approval or the disapproval of those presumed to be interested.

## CORRESPONDENCE.

**Chief Engineer Melville's Report on Steel Castings.**

*To the Editor:* The following is an extract from the report of Chief Engineer Melville of the United States Navy:

"In my report for last year attention was called to the ill success that had attended numerous attempts to use steel for machinery castings, and the experience of the past year has been to still further emphasize all that was then said. Reports have been received of failure after failure to produce sound castings of comparatively simple form and moderate weight, and design and patterns have been altered in the hope that better results might be obtained with change of form. In many cases the changes have availed nothing, and after long delays application has been made to use forged steel or cast iron; in others, when the dimensions have been increased to nearly what would be required for the latter metal, sound castings have been obtained. The truth of the matter is that the manufacturers have not kept pace with the demands of the consumers, and unless there is a very great improvement in the making of steel castings, and in a very short time, a return to cast iron will be inevitable, since it is evident that the only reason for using the more expensive material is that the weight of the parts may be decreased in the proportion of its greater strength."

The above is a very severe criticism, and it seems a little one-sided, as no account is taken of the thousands of steel castings that have given satisfaction. The constantly increasing demand for them in all large work indicates that they are necessary to the best modern engineering practice, and it seems extremely improbable that naval engineering will be a single exception.

When steel rails first came into use a breakage was heralded all over the country, and a few years ago steel rails were so distrusted as to cause quite a set back in their use. When the nature and proper working of the steel became better known, breakages practically ceased and confidence was restored.

When designers of steel castings cease to demand impossibilities, or when manufacturers get "backbone" enough to decline to make steel castings from patterns so designed that the castings will certainly be defective, even at the risk of losing a large order, defective castings and breakages will be less frequent. There is a large field for steel castings, but in regarding their possibilities we must not be blind to their limitations. They are more difficult to make than iron castings, and many patterns that would give perfect castings if made in iron would give very poor ones in steel.

Men can be found willing to make castings from any pattern, trusting that the surface will be good, and that the casting will be accepted, but unless the designer has some knowledge of steel castings it is very unsafe to judge by the surface only. In fact, it was once true that a good surface was an indication of an inferior casting, but happily this is no longer the case. The makers of steel castings are in many cases large users of them, and they have none of the difficulties experienced by the Navy Department. They make their designs conform to known laws of the action of steel, and if they were always candid enough to prevent their customers from defying these laws all would be well; but a man never likes to be told that his design is defective, and few men are willing to perform such a disagreeable service for him.

Again, it is a well-known fact that in all kinds of cast work there are apt to be de-

fects, and the best practice is to expect small defects and to design accordingly. It should also be noted that the difficulty in getting perfect castings is not confined to steel alone. One case at least may be cited where when extreme difficulty was found in getting perfect steel castings of a certain design, permission to use iron castings was granted, and so far about one-half the iron castings have been condemned.

If it is true, as the Chief Engineer says, that there has been failure after failure to produce sound castings of simple form and moderate weight, what is the logic of asking for some of the exceedingly heavy and complicated shapes used in ship construction? Far better is it to make these large and complicated castings in several pieces and bolt them together. If this is done we can then know exactly what strength there is in the structure, otherwise such knowledge is impossible, as defects often exist unknown until breakage occurs. In proper designs cast steel has three or four times the strength of cast iron, but defective designs can never be depended upon, and it often happens that the more metal we put in, the weaker the part becomes.

Like causes will produce like results, and if a casting has on it large bosses or consists of heavy sections so placed as to preclude the possibility of feeding them directly with a riser, such portions will have shrinkage holes in them, and though the surface may be perfect the interior is defective. Again, if there is much variation in thickness of metal in any but the simplest shapes, it is almost impossible to avoid shrinkage cracks, and they are apt to occur either where a light and heavy section join or in the heavy section. These cracks are a special source of danger, as they are often scarcely visible on the surface of the casting. The principal cause of these defects is that the dry sand mold in which the casting is made is very hard and offers great resistance to the shrinkage of the metal, which has but little tenacity at the temperature when it begins to shrink, and is apt to tear apart. There is, however, another form of crack due to the unequal contraction of the casting. It occurs when a thin section is prevented from shrinkage by being surrounded, or partially surrounded, by one much heavier. A disregard of these facts will surely cause defective castings, though the surface may appear practically perfect.

Not long ago I was told by the representative of a large establishment manufacturing a special article, and requiring a great many iron castings from the same pattern, that they always broke up the first casting made from any new pattern to see if it was perfect. If this is considered necessary in cast iron, how much more important is it for us to be careful of our designs for steel castings. The steel company with which I am connected has taken what seems to me to be the proper stand on this subject. They took a contract for some castings not very long since with the distinct understanding that the patterns should be so modified that sound castings could be produced from them, which was not the case as they were designed. When the modifications were suggested, they were so radical that the parties for whom the castings were intended strongly objected, in reply to which the steel company wrote the following:

"Should we furnish these castings for you and they pass the inspection, be placed in the ship and subsequently break, we should be blamed, and steel castings generally would receive another set back. If we can help it we do not propose that anything of the kind shall happen. We want to furnish the castings for Cruiser No. 000 such as will add to our reputation, not detract from it. We would say, in conclusion, that we would rather throw up

the contract than be compelled to furnish castings which we know will not be satisfactory in service. We trust that you will think the matter over again and allow us to so modify the patterns as to insure good castings."

It may also be well to point out that this steel company is not alone in its objection to complicated shapes. In a conversation not long since with a prominent steel maker who has just returned from England, I found that the same battle was going on between the designers and the steel makers over there. He reported one case in particular where the superintendent of a large combined steel works and shipyard said that a few years ago the requirements of the naval constructors were such that it would seem as if they would have to revert to cast iron. He found the greatest difficulty in persuading the designers to confine themselves to such shapes as could be made successfully. Now, however, that they have found out the limitations of steel castings, much better results are obtained. With regard to this point, it seems to me that if there are any castings more important than others it is those that go into our war ships. Not only do the lives of men, but the safety of our seaports, depend on them.

Some complicated steel castings that had passed the rigid tests and inspections of the Navy Department have broken in service and been found to be defective. The surfaces were probably perfect, and no more inspection could have discovered interior defects. This is the most serious difficulty we find in making satisfactory steel castings of complicated shapes, and the only sure remedy for it is to bear in mind the action of molten steel, in making designs which should be of such a character that an intelligent inspector can separate with absolute certainty the good from the bad castings. I may add that I have broken up complicated steel castings that had been condemned for some slight defect, and found in them defects far worse than the one for which they were condemned. Having had such an experience as this, we feel it our duty to enter a protest against running unnecessary risks when they can be avoided.

H. L. GANTT, E.M.

*To the Editor:* The Chief of Bureau of Steam Engineering of the navy may be correct in his views as to steel castings, as inferior castings are certainly made, and impracticable shapes are frequently designed. We find that we are able to make steel castings that are satisfactory and sound in the eyes of our customers. We make a majority of the moving parts of engines and machinery of steel, using the same sizes as formerly used for cast iron, thus making them two and one-half times as strong, reducing that pest of managers—breakdowns. Certainly we do not use them simply to secure lightness, as seems to be the only purpose of the bureau. You are correct that the steel-casting business is but an infant, and we know that there is an immense amount to learn about it. Very respectfully,

MACKINTOSH, HEMPHILL & Co., LIMITED.  
W. WADE, Secretary.

PITTSBURGH, PA.

The Western Window Glass Manufacturers' Association, composed of window-glass manufacturers of Western New York, Pennsylvania, Ohio, Illinois and Michigan, was in session at Columbus, Ohio, last week. Those in attendance at the meeting represented about 50 or more firms, and it is understood that the most important matters considered were the plans for limiting production and agreeing upon a combination scale for the sale of product. A resolution was adopted that no furnace owned by any member of



the association shall go in blast before October 1. Last year the association fixed a discount of 80 and 10 per cent from the list price. The discount adopted at the meeting last week is 80, 10 and 5 per cent. from the list price.

## THE WEEK.

Barondess, lately the riotous leader of the cloak-makers' union in this city, who is now looking for a job, attributes all his misfortunes to a grand mistake in joining the anarchists, whose ways, he says, are only evil.

The machinery of a distillery in Peoria, Ill., is to be adapted to the introduction of the Japanese process, which greatly reduces the cost of manufacture.

Steel water pipes will be used in Paris in making an extension of the present system.

Captain Bates, the Commissioner of Navigation, in his forthcoming annual report to the Secretary of the Treasury will give a review of the history and effects of protective shipping legislation and legislation of an opposite character for a century past. He has prepared some interesting statistics comparing the survival and durability of British and American built vessels of wood and iron, sail and steam, and his figures seem to show that American vessels outlast the English ones, in spite of the prejudice in favor of the English builders and the heavy discriminations of the English underwriters against our craft. Captain Bates will devote considerable attention to the question of insurance discrimination and its effect in raising the running expenses of American vessels and maintaining the supremacy of the English. His first aim is to set his ideas on these subjects clearly before Congress and the public. He will be ready to put some of them in the form of bills if the committees of Congress request it.

All reports agree in the conclusion that taking the Dominion over, from Prince Edward Island to British Columbia, the harvest has been the largest ever reaped.

In Boston a trade union and an organization of employers representing the building trade have agreed with reference to trade schools in that city that none but indentured apprentices should be allowed to enter.

China and Belgium want improved fire arms, as well as Russia, France and Italy. The prospects of gun manufacturers are improving.

Steel screw steamboats on Long Island Sound will soon displace the wooden side wheelers, according to present indications. Besides two for the Providence and Stonington Steamship Company, the Harlan & Hollingsworth Company of Wilmington, Del., have received a contract to build two twin-screw steamers for the New Haven Steamboat Company, which will make 20 miles an hour. They are to be 300 feet long on the water line and 315 feet over all, 47.10 feet beam at the water line, 53 feet beam over the guards, and to have two triple expansion engines, with three cylinders of 24, 38, and 60 inches diameter, respectively, and 30 inches stroke. Side wheelers still rule on the Hudson River, but wooden boats began some time ago to give way to boats of steel.

Heavy corn engagements of ocean freights are being made at this port, extending into January.

It is noted as a very singular circumstance that all legislation in this country has failed to control the price of silver, which is now lower than it was before the

discussion of the Free-Coinage act. And silver differs from other commodities in this respect—that its value seems to have been in no wise influenced by the large purchases by the Government. Once mined, silver remains in some shape or other in enormous accumulations, "hanging over the market" with a depressing influence. Being practically cornered, a break may come from any radical change in circumstances.

The courts in Pennsylvania having failed to bring to account prominent officials alleged to have been implicated in the defalcation of Bardley, a former State Treasurer, Governor Pattison has called an extra session of the Legislature to make the necessary investigation.

Italy and Austria both have a wheat crop larger than last year's.

A Chicago telegram says there is no corn in the country. The great bulk of the visible supply is tied up by S. V. White & Co.'s failure. Had Mr. White added 500,000 bushels more to his 7,000,000 bushels of cash corn, actually paid for, he would have practically owned the visible supply of corn of the United States and Canada, and could have set his own price on it. The cash necessary to have made that purchase possible would have been less than \$255,000. The amount he had invested in the cash article was \$4,200,000. To have cornered corn would have taken not over \$4,500,000. To make the situation more striking, it is now cropping out that Chicago shipping firms generally carrying from 2,000,000 to 3,000,000 bushels of corn at this time of year are almost entirely out.

The Brazil line of steamers from Baltimore, which was started last spring, has been discontinued. There was no trouble in obtaining an outward cargo, but difficulty was experienced in securing wharf accommodation, and further delay was caused by the lack of transportation from the interior to the coast. Brazilian laws, too, are said to be contrary to commercial usages, and cause foreign shippers considerable trouble. Recently there were 74 foreign vessels lying at one time in the harbor of Rio Janeiro waiting to be loaded. Many had been waiting from 40 to 60 days. The losses thus arising consume all the profits of the vessels employed.

A New York paper published photographic *fac-similes* of receipted bills for arms shipped by prominent firms in this city to Balmaceda and the Congressionalists. The firms named were apparently willing to deal with either party alike, if there was profit in the business.

A new type of drawbridge is being built in Chicago to span the Chicago River. By a folding instead of a swinging process no central pier is needed, and greatly increased facilities for navigating the narrow river are obtained.

The basis of confidence in the mercantile world is defined in a broker's circular as follows: Wheat, 550,000,000 bushels; corn, 2,000,000,000 bushels, oats, 700,000,000 bushels; cotton, 7,500,000 bales, and hay, fruit, vegetables and everything that the earth produces in incalculable quantities.

The union meeting of the Brotherhood of Locomotive Engineers, held in Jersey City last Sunday, was quite fully attended. All the trunk lines of railroad were represented by prominent engineers and master mechanics. Several speeches were delivered. That by P. M. Arthur was of the most interest to the craft. He traced the history of the organization from its formation as the Brotherhood of Footboard Men down to to-day, when, he said, the brotherhood is known as the aristocracy of labor unions. He defended the policy of strikes

to the extent of asking how otherwise the members were to protect themselves. The brotherhood now has, he said, 481 subdivisions, with a membership of 31,500. The first convention was held in June, 1864. The organization had paid out \$3,500,000 for insurance money. Other speakers were Governor Abbot and Mayor Cleveland. Chauncey M. Depew, in a complimentary telegram, pronounced the brotherhood "a model for trade unions."

Too much coffee in the market as well as too much corn brings the speculators to grief.

The meaning of reciprocity was defined by Senator Hiscock in a speech at the Orange County Fair as follows: Briefly, reciprocity is the same relation between nations as that which exists between two farmers who are neighbors. If one has a surplus of one essential and the other has something needed by both, they exchange what they have for what they want. Reciprocity does not mean that the products of any competitive nation shall be forced into our markets to our detriment, but that we shall trade with nations not competitive for those things which they have in abundance and which we need, and give the products of the fields and shops which they have not.

Canada is restive under the trade restrictions imposed by existing treaties. She wants broader markets. In the Parliament at Ottawa last week Premier Abbott moved an address to the Government asking that the British Government take steps to renounce and terminate the effect of certain provisions in the treaties with the German Zollverein and with the kingdom of Belgium. The treaties referred to containing the "most favored nation clause" preclude Canada from offering an inducement to other countries which may desire to enter into reciprocal arrangements. Suffering as she now does from the exclusion of her products from the United States, Canada will insist strongly that she should be permitted to make her own commercial treaties.

During the first eight months of this year the exports of gold were \$77,295,246. During the same time the imports were \$5,730,167, leaving an excess of exports of \$71,565,079. To this must be added \$4,573,678 excess of exports of silver, and deducting \$10,780,555 as the excess of imports of merchandise, we reach an apparent balance against us of \$65,358,202.

A complete new set of silver certificates will soon be placed in circulation by the United States Treasury. They will all be printed on the new distinctive paper, which the engraving of their backs will be expressly designed to display as advantageously as possible.

## PERSONAL.

Robert Bentley, the well-known Youngstown iron manufacturer, has returned from a long tour to the Pacific Coast, made with the special object to study the coal and iron resources. The conclusions which Mr. Bentley reached are summarized as follows: "As to the future of the iron business on the Pacific Coast, there is no question but that at no distant day a wide field is going to be opened, as that section is widely developed for all of the products of iron and steel, and at some future time the Pacific Coast will manufacture, under the provisions of the McKinley bill, what she is now receiving from the East and abroad."

Frank J. Wetherell of Wetherell Bros., steel merchants, Boston and New York, sailed from the latter city on September 16 for a tour of Europe.

Henry M. Howe of Boston starts for Europe on the 3d inst.

### Change in the Sliding Scale at Carnegie's.

Carnegie Bros. & Co., Limited, have given notice to their employees that they desire to make a change in the sliding scale which has been in force at the Edgar Thomson Steel Works and Blast Furnaces at Bessemer, Pa., since October, 1888. On Tuesday evening, 29th ult., notices were posted to this effect in several conspicuous places about the plant, and caused considerable surprise among the employees, as they were totally unaware that any changes in the present sliding scale were contemplated by the firm. The notice was headed with a copy of the original agreement made with the men in 1888 and 1889, which reads as follows:

1. It is understood and agreed that these works will hereafter be run by two (2) turns, as other steel-rail mills are.
2. Wages will be paid upon a monthly sliding scale, based upon the average net price received for rails delivered on cars or barges at the works during the preceding month.
3. This agreement shall last for the remainder of this year and for the years 1889 and 1890. The association or its employees can give notice not later than October 1, 1890, of a desire to end it, in which event it shall cease December 31 of said year. If such notice be not given by either party by October 1, 1890, or in any later year, then this agreement shall remain in force for the following years until such notice be given.
4. The prices received for rails shall be sworn to by the principal bookkeeper of the association and by a member of the association, and the workmen shall have the right to appoint an agent (at the expense of the firm), who shall be permitted to examine all documents bearing upon the prices received for rails, and who shall certify to the correctness of the statement of the association.
5. We, the undersigned, having read the above and examined the scale of wages hereto annexed and made part hereof, hereby apply for employment under their conditions, and for the valuable consideration of employment given by the association, we, each one for himself, hereby pledge ourselves as men and citizens to adhere faithfully thereto, and to take such position at said steel works and furnaces as may be assigned to us; to accept as full payment for our services, wages at the rates set forth in the scale referred to, and that we will abide by and obey the rules and regulations, a copy of which is hereto attached, publicly posted at said steel works and furnaces.

Underneath this printed contract signed by the men at that time is a notice to the effect that the firm desires to terminate the previous agreement. The notice reads as follows:

#### NOTICE.

To our employees:

As provided in the above agreement, we hereby notify you that we desire to end it December 31, 1891, and that we will be ready to make a new sliding scale agreement with you at any time after October 10, 1891, to take effect January 1, 1892. The contemplated changes are rendered necessary principally by the introduction of many mechanical improvements and advanced methods of manufacture, by which the output has been very much increased since the above agreement went into effect. Signed, CARNEGIE BROTHERS, Limited.

H. C. FRICK, Chairman.

At this time it is impossible to say what changes in the scale will be made, but it is certain that the firm propose to make a reduction. As the present agreement will continue in force until the last day of this year, three months remain, which will give ample time to draw up a new scale. Should the reduction proposed prove very great, it is not improbable that the men will resist it, but no doubt every effort will be made to arrive at an understanding that will prove satisfactory to both the firm and their employees.

R. W. Hunt & Co., inspectors, of Chicago, have established an office in the Union Trust Building, New York, with John J. Cone as resident manager.

## MANUFACTURING.

### Iron and Steel.

The Millvale Rolling Mill, operated by the Millvale Iron Company, Limited, lessees, of Pittsburgh, have adopted the M. V. Smith fuel-gas process. Nine double-breasted gas producers of the M. V. Smith type are being erected in the plant.

The Buena Vista Furnace, operated by the Buena Vista Iron Company, Buena Vista, Va., has been forced to shut down, owing to an accident. It is said that the furnace will not be able to start up for several weeks.

The Puget Sound Iron Company, Seattle, Wash., have filed articles of incorporation. The capital stock is fixed at \$1,000,000, divided into 10,000 shares at \$100 per share, and the right is reserved to increase the capital stock to \$2,500,000.

It is reported that the affairs of the Talladega Iron and Steel Company will shortly be settled and their blast furnace be put in operation.

The Maysville Fuel, Light and Steel Company have been incorporated, with a capital stock of \$100,000, for the purpose of erecting a steel plant at Maysville, Ky.

The new plant of the Lookout Iron Company has been completed at Harriman, Tenn., and consists of 20 single puddling furnaces and three trains of rolls, and has a daily capacity of 80 tons of finished material.

The Riverside Iron Works of Wheeling, W. Va., are making some extensive improvements in their tube works at Benwood, W. Va. A new building entirely of iron is being erected and in it will be also a new heating furnace large enough to make 14-inch pipe. The largest size now made is 8 inches, and the increase in the demand for the steel piping, of which this firm are exclusive manufacturers in larger sizes, is the reason given for the increase. It is also stated that a new skelp mill will be added to the plant.

The Joseph Bell Stove Company of Wheeling, W. Va., have decided to remove their entire plant and office to Moundsville, W. Va.

During the months of October, November and December wages at the Homestead Steel Works of Carnegie, Phipps & Co., Limited, at Homestead, Pa., will be based on \$25 as the selling price of 4 x 4 inch billets. For the months of July, August and September wages were based on the above price for billets. The average selling price of 4 x 4 inch billets for the three months ending September 30 was a little less than \$25 per ton, but as \$25 is the minimum price below which wages cannot go, wages for the last three months of this year will be based on that figure.

The Pittsburgh Forge and Iron Company of Pittsburgh, whose plant is located in Allegheny City, Pa., are now turning out one of the largest shafts ever sent out of Pittsburgh. It is 20 feet long, 17½ inches in circumference, and weighs 8½ tons. This firm have been doing considerable work of this kind lately, and are operating their plant to its full capacity.

The Moorhead-McCleane Company, proprietors of the Soho Iron and Steel Company in Pittsburgh, have been granted an extension of five years by their creditors. On Thursday afternoon, the 24th ult., a meeting of their creditors was held in the office of Geo. Shiras, their attorney. The committee appointed at a former meeting to examine the plant reported to their creditors that the entire plant of the firm was worth at least \$1,000,000. After this report had been made a statement was submitted showing the value of the accounts due the firm. Each one of the accounts, as well as each item about the works, was taken up and discussed in full, with the result that the plant was taken at the value named, while the accounts were believed to be worth more than originally reported by the firm in the statement which they submitted to their creditors. It was decided at the meeting that no creditors should be included in the extension whose claims do not amount to more than \$1000. It was decided to accept a proposition to pay off in installments as follows: 10 per cent. for the first year, 15 per cent. for the second year and 25 per cent. for each of the three succeeding years, with interest. The plant is to be placed in charge of three trustees, who shall be chosen from the creditors, and the company are to give a mortgage on their works for the full amount of their liabilities. Nearly all the creditors have already signed the agreement to allow the firm an extension.

The Duluth Iron and Steel Company's coke furnace at Duluth, Minn., has been leased to a syndicate composed of Crerar, Clinch & Co., A. S. Bertolet and Charles Himrod & Co. This furnace was practically completed some two years since, but was not put in operation. The stack is 16 x 75 feet, equipped with three Gordon-Whitwell-Cowper fire-brick stoves,

and its machinery is of the most approved construction. The lessees are now preparing to blow in the stack and expect to have it in operation some time in October. They will manufacture Bessemer pig iron exclusively, for use by the West Superior Steel Works. A. S. Bertolet will have direct charge of the furnace.

The Pittsburgh Bridge Company of Pittsburgh will shortly increase their capital stock from \$1,000,000 to \$200,000. A number of extensive improvements are being made to the plant of this firm, and their business is growing very rapidly, which is given as a reason for this increase in their capital stock.

The Trethewey Mfg. Company of Pittsburgh have recently sold to P. H. Laufman & Co., Limited, of Apollo, Pa., one of their 124-inch shears. This shear will be placed in an extension to the plant of P. H. Laufman & Co., Limited, which is now being erected.

The Bessemer steel plant of the Oliver Iron and Steel Company, located at Twenty-sixth and Smallman streets, Pittsburgh, was started up on double turn on Monday of the present week. The plant has been closed down for some time, owing to a strike brought about by the employees demanding a 10 per cent. advance in wages. This demand was refused by the firm, and all hands were discharged and the works shut down for an indefinite period. Some time after the shut down occurred, the employees entered into negotiations with the firm with the view of adjusting the difficulty that had arisen between them. The firm refused to make any settlement of the trouble unless the men would accept a reduction, and they have finally consented to do this. The plant employs about 300 men and boys, and will no doubt be operated full time for a long period, as it is understood the firm have a considerable number of orders on hand.

Soho furnace of the Moorhead-McCleane Company, at Pittsburgh, was closed down last week on account of the supply of ore being exhausted.

A site has been selected for the Bessemer steel plant to be erected by the Shenango Valley Steel Company at New Castle, Pa. The plant will be erected immediately opposite and adjacent to the rod mill of the New Castle Wire Nail Company. As before stated in these columns, the entire plant will be erected by the Pittsburgh Iron and Steel Engineering Company, Lewis Block, Pittsburgh, Pa.

The Pennsylvania Steel Company, whose works at Steelton, Pa., and Sparrows Point, Md., are among the finest in the United States, have decided to adopt the Ridgway Steam-Hydraulic system of cranes, and orders have been placed with Ridgway & Son for an outfit for the No. 1 furnaces.

The furnace of the Tonawanda, N. Y., Iron and Steel Company, made 219 tons Saturday, 19th ult., nearly all foundry iron. The average daily make for August was 174½ tons. Lake Superior ores are used. The furnace is owned by Cincinnati parties.

The plant of the Radford Pipe and Foundry Company, at Radford, Va., is nearly completed, and it is expected that shipments of cast-iron water pipe will commence in November. Its capacity is 150 tons daily. The same company are operating under lease the large Anniston Pipe Works plant. They are running on large orders and making a heavy output.

Emma Furnace of the Union Rolling Mill Company, Cleveland, Ohio, was put in blast last week, after being idle for about three months, during which time extensive repairs and additions were made to the furnace. These included three Ford & Moncur hot-blast stoves, erected by D. R. Lean, engineer and contractor, of Pittsburgh, Pa. The improvements made to the furnace will add considerably to its capacity, and it is anticipated that it will have a very successful run.

A company has been formed to take over the property of the Principio Furnace, Cecil County, Md., and its estate of about 8000 acres of mineral, timber and farming land in Maryland and Delaware. The property is one well known as having been for more than 150 years the seat of iron manufacturing operations, the first stack having been built at Principio in 1723. In recent years a new charcoal furnace has been built, 60 feet high with 10-foot bosh. The new concern is to be entitled the Principio Furnace and Rolling Mill Company, the director, being Nelson E. Whitaker, representing the furnace owners of Wheeling; Isaac H. Cary of Brooklyn; Herman C. Mechling, New York agent of the Whitaker Iron Company, and Henry B. Haigh of the Iron Clad Mfg. Company, New York. The furnace is located near the Philadelphia, Wilmington and Baltimore branch of the Pennsylvania Railroad, and is readily accessible by the Baltimore and Ohio Railroad. The



plans of the new management include the building of a rolling mill, the manufacture of skelp, sheet and plate, boiler iron, iron pipe, &c.

#### Machinery.

The Lidgerwood Mfg. Company have established a branch house in St. Louis for the sale of their standard hoisting engines, at 610 North Fourth street and 609 North Third street, under the management of Chas. W. Melcher.

The National Foundry and Machine Company have been organized at Louisville, Ky.

Meriden Machine Tool Company, Meriden, Conn., have recently sent out a circular embodying some novel ideas. The sheet, while advertising but one machine, shows 19 cuts, which are arranged in groups and singly. At the top are shown eight hand lathes in a row, and immediately below at one end is a representation of their forming lathe. The space below the other seven hand lathes is ruled off and labeled: "This represents the shop room saved by using one of our forming lathes." The same idea is utilized further down on the sheet, where four turret lathes are contrasted with another of their machines, and below all a large cut of the machine advertised is shown.

Wooster & Wilcox will operate a foundry and machine shop at Winsted, Conn., where a suitable plant is being erected.

The machine shops of the Norfolk and Western Railroad, at Shenandoah, Va., have been destroyed by fire, together with all the machinery and supplies, entailing a loss of \$75,000.

A new machine shop has been added to the plant of the Linwood Iron Company, at Linwood, Pa.

The Lexington, Ky., foundry has been burned. The foundry had only been built about a year, and the loss is placed at \$30,000.

The Board of Directors of the Westinghouse Air Brake Company, Wilmerding, Pa., have declared a dividend of 5 per cent., payable to stockholders on record October 10. Transfer books will be closed from October 1 to October 10, inclusive.

#### Hardware.

The Champion Saw Company of New Brighton, Pa., have been incorporated, with a capital stock of \$60,000. The incorporators are F. G. Rorhaste, New Brighton, Pa.; J. D. McAulis, New Galilee, and J. W. Forbes, Beaver Falls, Pa.

E. C. Stearns & Co., Syracuse, N. Y., are erecting a large extension to their main factory building, the size of the extension being 60 x 153 feet. It is built in the slow burning construction style, and will be very complete in all respects.

The Tell City Fifth Wheel Mfg. Company have been incorporated at Tell City, Ind., with a capital stock of \$30,000. The company will manufacture fifth wheels, carriage supplies and all kinds of castings and machinery. Jacob Miller, formerly of the Jacob Miller Fifth Wheel Mfg. Company of Elizabethtown, Pa., is manager of the new company.

The Atlas Mfg. Company, New Haven, Conn., manufacturers of wire hardware, have recently reorganized and increased their capital. L. E. Osborn is president and secretary and H. L. Bradley treasurer. New and larger quarters have been secured and are being fitted up with new machinery. Several new lines of goods are in preparation, which will be ready for the market soon.

Derby & Ball, Bellows Falls, Vt., are taking active measures to rebuild their factory, and will have considerably increased facilities for the production of scythe snaths, in which for so long a time they have been prominent manufacturers. Their warehouse containing a large quantity of goods fortunately escaped destruction.

#### Miscellaneous.

A part of the first 10 per cent. of the capital of the American Tin Plate Company has been deposited in the Ellwood, Ill., Bank.

It is announced that the Washburn & Moen Mfg. Company will be the purchaser of a considerable portion of the plant of the Worcester Steel Company, at Worcester, Mass.

The Chicago Foundry Supply Company, operating the Peerless Facing Mills, corner Eighteenth and Rockwell streets, Chicago, will shortly double their capacity, and will add a six-story warehouse to their large plant. They but recently built what is generally considered the most modern and best equipped facing mills in the country, if not in the world, and their success was instantaneous. The works are conveniently located on two railroads and the Belt road. Most of the members of the company thoroughly understand the facing and foundry supply business, having been practically engaged in it for years.

## TRADE REPORT.

### Philadelphia.

Office of *The Iron Age*, 230 South Fourth St., PHILADELPHIA, Pa., September 29, 1891.

Notwithstanding the buoyancy in other directions, buyers of Iron stubbornly resist all attempts to advance prices. There is a strong undertone to the market, and in various ways there are indications of increasing strength, but measured by actual quotations, there is no change from last week or from several weeks immediately preceding. There is less pressure to sell, however, and there is an almost entire absence of concessions, so that it may at least be called a seller's market. The chief reason for this apparent apathy is due to the fact that the Steel mills are not very actively employed, neither is there the demand for Finished Iron which might reasonably be expected. The comparatively light demand for Bar Iron, Skelp Iron and other specialties is reflected in the market for Mill Irons, and while this may be only temporary, it, in the meanwhile, prevents any very spirited demand for the grades mentioned. There is no actual weakness, but there is not enough demand to cause an advance, and until there is a heavier consumption of both Finished Iron and Steel it will be difficult, if not impossible, to realize more money for the crude article. The feeling is very hopeful, nevertheless, and the outlook appears to warrant the expectation of an improving market, but how soon it will warrant an advance remains to be seen.

**Pig Iron.**—Some leading makers are virtually out of the market at current quotations, but there are plenty of others ready to supply all comers at the old prices. That is to say, those who were sellers at \$17.50 @ \$17.75 for No. 1 Foundry Irons are now holding for \$18 @ \$18.25, and those who sold Mill Irons at \$14.25 @ \$14.50 are asking \$14.75 @ \$15. Others, who were under the necessity of accepting business at less money, are now stepping in at the figures which makers of favorite brands have discarded, and it begins to look as though the adjustment would be completed on the basis of 25¢ to 50¢ advance all around. It cannot be claimed that this has been realized as yet, although it has in some cases and in others it is likely to be accomplished at an early date. The strong point is that leading brands are largely engaged for the balance of the year, and as the demand is increasing (especially for Foundry grades) there is at least a fair probability that a movement to the extent named will be successful. There is no scarcity of Iron, however. On the contrary, there is an abundance of some kinds, but, be the quality what it may—good, bad or indifferent—holders want more money for it and appear to be very confident of getting it, too. This in itself is strong testimony to the inherent strength of the position. On the buyers' side there are some indications of a change of feeling, but it is not very strongly marked. At the old prices they would buy more heavily or would pay a slight advance for forward deliveries of their favorite brands, but that is about the extreme limit of their ideas for the present, neither of which meet with much favor from holders. The consequence is a good deal of negotiating for a comparatively moderate volume of business, although when buyers' terms are accepted good-sized lots have been taken at prices with the following limits, varying according to brand, point and time for delivery, &c.

Ohio Softeners, No. 1x.....	\$19.00 @	.....
Ohio Softeners, No. 2x.....	18.00 @	.....
Standard Penna., No. 1x.....	18.00 @	\$18.25
Standard Penna., No. 2x.....	16.25 @	16.75

Medium Penna., No. 1x.....	17.50 @	17.75
Medium Penna., No. 2x.....	16.00 @	16.25
Virginia, No. 1x.....	16.75 @	17.25
Virginia, No. 2x.....	15.50 @	16.00
Standard Neutral All-Ore Forge	14.50 @	15.00
Ordinary Forge Cinder mixed ..	13.75 @	14.00
Hot-Blast Charcoal.....	20.00 @	22.00
Cold-Blast Charcoal.....	24.00 @	27.00

**Ferromanganese.**—Prices are a shade lower, with sales said to have been made at \$63.50 @ \$64, duty paid, for 80 %.

**Muck Bars.**—Market somewhat firmer, but not very active. As a rule \$26.75 @ \$27, delivered, is asked for good Bars, but buyers are not bidding much over \$26.50, and appear to be quite indifferent whether they get them or not. Any material increase in the demand, however, would easily lead to better prices. Small lots taken at \$26.75 and \$27.

**Steel Billets.**—Market unsettled and very hard to quote, as different sellers have different ideas in regard to the market. Early deliveries, however, could be had at as low prices as quoted for some time past, say \$27, Harrisburg or equivalent points, and from that to \$27.50 at seaboard. Some makers refuse to consider offers at these prices, while others are said to be shading even the lowest quotations, especially for prompt deliveries.

**Steel Rails.**—The market is assuming a better tone, and while \$30 is readily accepted for winter deliveries, there is some hesitation in giving options for later dates. Prospects appear to be improving, although there has not as yet been the amount of business placed that was generally expected, but it is believed that during 1892 the demand will exceed all former records.

**Bar Iron.**—The demand is not as active as could be desired, and in order to run full, low prices have been accepted. There has been enough business to keep most of the mills going, but there is some disposition to delay specifying; hence orders for immediate delivery can be placed to good advantage. Ordinary quotations are from 1.70¢ to 1.75¢ for city deliveries and 1.60¢ to 1.65¢ at interior points, although some claim to be getting better prices than these, but a good deal depends on what the buyers' requirements are. On the whole, the feeling is in favor of better prices ultimately, but in the meantime it requires some little hustling to keep fully employed at current quotations.

**Skelp Iron.**—Demand very slow; quotations nominally 1.70¢ @ 1.75¢, delivered, for Grooved, and about 1.85¢ for Sheared.

**Plates.**—There is no material change in the position, the current demand being about equal to the deliveries. There is a better inquiry, however, and prospects are considered to be quite encouraging to the selling interests. Meanwhile the demand has been of a general character, and without special movement in any direction. Boiler makers and tank builders have been good buyers lately, and it is said that there is a probability of an early improvement in the demand for bridge and architectural work. Meanwhile prices are unchanged and are quoted about as follows, delivered:

	Iron.	Steel.
Tank Plates.....	1.90 @ 2.00¢	2.00 @ 2.10¢
Refined.....	2.20 @ 2.30¢	2.10 @ 2.20¢
Shell.....	2.30 @ 2.40¢	2.40 @ 2.50¢
Flange.....	3.20 @ 3.30¢	2.50 @ 2.75¢
Fire-Box.....	4.00 @ 4.25¢	3.00 @ 3.50¢

**Structural Material.**—There is little or no change in this department. Mills are all pretty well employed for the present, and although there are no immediate indications of improvement, manufacturers feel quite hopeful in regard to the future. Prices are steady as follows, delivered: Angles, 2.05¢ @ 2.10¢; Sheared Plates, 1.95¢ @ 2.05¢, and 10¢ @ 15¢ more for Steel, according to requirements. Tees, 2.5¢ @ 2.6¢; Beams and Channels, 3.1¢ for either Iron or Steel.

**Sheet Iron.**—There is a good demand for Sheets, and while prices show no change, the tendency is gradually toward improvement. Mills are running full, and for best makes quote about as follows:

Best Refined, Nos. 14 to 20.....3.00¢ @ 3.10¢  
 Best Refined, Nos. 21 to 24.....3.10¢ @ .....  
 Best Refined, Nos. 25 to 26.....3.20¢ @ 3.30¢  
 Best Refined, No. 27.....3.40¢ @ .....  
 Best Refined, No. 28.....3.50¢ @ .....  
 Common, ¼¢ less than the above.  
 Best Soft Steel, Nos. 14 to 20.....3¢ @ 3¼¢  
 Best Soft Steel, Nos. 21 to 24.....3½¢ @ .....  
 Best Soft Steel, Nos. 25 to 26.....4¢ @ .....  
 Best Soft Steel, Nos. 27 to 28.....4¢ @ .....  
 Best Bloom Sheets, ¼¢ extra over the above prices.  
 Best Bloom, Galvanized, discount.... @ 67½¢  
 Common, discount..... @ 70 ¢

**Old Material.**—There is a little more inquiry, and in some cases prices are better, although the market is still very sensitive and not in a condition to bear much forcing. The usual asking prices are about as follows: Iron Rails, \$21.50 @ \$23; Steel Rails, \$17 @ \$18, delivered. No. 1 Railroad Scrap, \$20.50 @ \$21, Philadelphia, or for deliveries at mills in the interior \$21 @ \$21.50, according to distance and quality; \$15 @ \$16 for No. 2 Light; \$14 @ \$15 for best Machinery Scrap; \$13.50 @ \$14 for ordinary; \$14.50 @ \$15.50 for Wrought Turnings; \$9.50 @ \$10.50 for Cast Borings, and nominally \$24 @ \$25 for Old Fish Plates, and \$16 @ \$17, delivered, for Old Car Wheels.

**Wrought-Iron Pipe.**—The condition of the Pipe trade is not satisfactory, as extra discounts of 5 % and upward are quite frequent on desirable orders. A meeting is to be held in New York on Thursday, when an endeavor will be made to adjust prices, so that there will be at least some semblance of uniformity. Nominal discounts as follows:

Butt-Welded Black.....52½¢  
 Butt-Welded Galvanized.....42½¢  
 Lap-Welded Black.....62½¢  
 Lap-Welded Galvanized.....50 ¢  
 Boiler Tubes, 2½ inch and under.....52½¢  
 Boiler Tubes, 3 to 6 inch.....60 ¢  
 Boiler Tubes, 7 inch and larger.....55 ¢

Wm. D. Bennage, trading as Wm. D. Bennage & Co., has opened an office at 302 Drexel Building, Philadelphia, for the purchase and sale of Pig Iron, Iron Ores and Iron and Steel Scrap. James V. Umberger, an experienced Iron man, whose services Mr. Bennage has secured, will have charge of the buying and selling departments.

## Louisville.

LOUISVILLE, KY., September 28, 1891.

**Pig Iron.**—Orders for Iron for delivery this year have been steady during the week, and there has been quiet buying in quantities of 500 to 1000 tons. No increase in price, however, has taken place, as the buying would not justify it, nor has any anxiety been expressed by buyers that purchases could not be made on basis of prices that have existed for some time. There is a feeling, however, that the coming year will be a prosperous one, with higher prices for raw material, and that possibly this fall will show some difficulty in obtaining well-known brands without paying a slight advance. Car-Wheel Irons have been quiet, and those sold have been at prices that are regarded by many as much below cost. Railroad buying has not increased to any extent, and it is felt that until a strong movement from this source begins prices will drag, when one considers the large amount of Charcoal Iron in stock. We quote for cash, f.o.b. cars Louisville:

Southern Coke, No. 1 Foundry... \$14.50 @ \$15.00  
 Southern Coke, No. 2 Foundry... 13.75 @ 14.25  
 Southern Coke, No. 3 Foundry... 13.25 @ 13.75  
 Southern Coke, Gray Forge..... 12.75 @ 13.25  
 Southern Car Wheel, St'nd br'nds 18.50 @ 20.00

## Chicago.

(By Telegraph.)

Office of The Iron Age, 59 Dearborn street, CHICAGO, September 30, 1891.

The Iron market here is in about the same condition as it has been. Trade is fair, and in some lines there is more activity, but the volume of business still falls below expectations. The boom is sure to come, however, and preparations are being made for it. Large car builders are tired of waiting for the railroads to send in their orders, and are now notifying the leading lines that they are prepared to make contracts and will take notes for one, two and three years in payment. The reason given for this course is that valuable time will be lost if the car works stand idle any part of this winter, when it is reasonably certain that the demand next year will be beyond the capacity. With good business assured for at least two years, the railroads will easily be able to discount their own notes. Should this inducement to the railroads lead to heavy business in cars the needed stimulus will be given to the Western Iron trade. Higher prices are looked for in the near future. Forerunners of this are making their appearance in the shape of notices from manufacturers withdrawing quotations.

**Pig Iron.**—A better demand is noted for both Coke and Charcoal Iron. Consumers have been very free buyers of local Coke. As there are now four local Pig Iron makers, some rumors of cutting on competitive business are to be expected, but thus far nothing serious has developed in that direction. Quotations are maintained as before. Southern Coke Iron has been sold in fair-sized quantities, and in one or two cases for deliveries further ahead than it had been supposed the Southern manufacturers would care to contract. Our quotations now represent the cheapest sellers, some furnace companies having advanced rates to a point which takes them out of the market for the time being. Lake Superior Charcoal is in demand from Car-Wheel makers, who are endeavoring to work prices down to the old basis, but are not succeeding very well. Several round lots have been sold the past week at close to our quotations. Quotations are as follows, f.o.b. Chicago:

Lake Superior Charcoal.....\$17.50 @ \$18.00  
 Local Coke Foundry, No. 1..... 15.50 @ 16.00  
 Local Coke Foundry, No. 2..... 15.00 @ 15.25  
 Local Coke Foundry, No. 3..... 14.50 @ 15.00  
 Local Scotch..... 16.00 @ 16.50  
 Ohio Strong Softeners..... 17.75 @ 18.25  
 Southern Coke, No. 1..... 16.75 @ 16.25  
 Southern Coke, No. 2..... 15.00 @ 15.25  
 Southern Coke, No. 3..... 14.50 @ 15.00  
 Southern, No. 1, Soft..... 15.00 @ 15.75  
 Southern, No. 2, Soft..... 14.50 @ 14.75  
 Southern Gray Forge..... 14.00 @ .....  
 Southern Mottled..... 13.50 @ 14.00  
 Tennessee Charcoal, No. 1..... 18.00 @ .....  
 Alabama Car Wheel..... 20.50 @ 21.50  
 Coke Bessemer..... @ .....  
 Hocking Valley, No. 1..... 17.00 @ 18.50  
 Jackson County Silvery..... 17.50 @ 18.00

**Spiegeleisen.**—Small sales are being made at \$28 for 20 % and \$38 for 30 %. Illinois has not bought any foreign Spiegel, but makes more than its own requirements.

**Bar Iron.**—Numerous inquiries are being received by manufacturers for small lots, but large orders have for some time been wanting. Car orders are in sight, but have not yet taken definite shape. Western mills quote 1.75¢ @ 1.80¢, Chicago, half extras, and find Eastern mills cutting under them, which has not often been the case in recent years.

**Plates.**—Mill business is at present rather heavier than trade from store. Dealers quote small lots from stock as follows: Tank Steel, 2.40¢ @ 2.60¢; Tank Iron, 2.50¢ @ 2.60¢; Sheet Iron, Nos. 10 to 14, 2.60¢ @ 2.70¢ to 3¢ @ 3.25¢; Shell Steel, 2.75¢ @ 3¢; Flange Steel, 3¢ @ 3¼¢; Fire Box Steel, 5¼¢. Boiler

Tubes are nominally quoted at makers' discounts, but neither manufacturers nor jobbers are adhering to them. Mill lots of Tank Steel are still being sold by some makers at the extreme prices recently current.

**Sheets.**—Business in Galvanized Iron is very heavy and manufacturers' prices are stiffer. Jobbers are also doing a large trade and are gradually lifting prices to a higher level than the old quotation of 67½¢ off on Juniata. Black Sheets are neglected. Manufacturers report light inquiries, while jobbers find their trade waiting a stimulus which will probably come with colder weather.

**Merchant Steel.**—The crowded condition of the mills is at last having an effect on prices. A great deal of business in cheap Steel was entered last week under the spur of an advance of about \$1 per ton by leading makers. Carload lots of Tire Steel can still be had at 2.30¢ @ 2.40¢; Open-Hearth Spring, 2.25¢ @ 2.30¢, and Machinery, 2.30¢ @ 2.40¢, Chicago delivery, but these prices are likely to be marked up soon.

**Track Supplies.**—The Steel Rail trade shows no change; the demand for small lots is steady and prices range from \$31.50 to \$33, according to circumstances. Business is dull in Splice Bars, Spikes and Track Bolts.

**Old Rails and Wheels.**—Old Iron Rails are more plentiful than for a long time. Several thousand tons are now seeking buyers, who seem disinclined to take hold. Nominal quotation is \$23, but it is doubtful if over \$22.50 could be realized. Old Steel Rails are quiet at \$14 @ \$16, quoted according to length. Old Car Wheels are wanted by numerous consumers at \$16, but holders are asking \$16.25.

**Scrap.**—The demand from local consumers is very light; outside consumers are more disposed to buy, but not in any great quantity. Dealers' selling prices are unchanged. We quote as follows, per net ton: No. 1 Railroad Forge, \$19 @ \$19.25; No. 1 Forge, \$18.50; No. 1 Mill, \$14; Fish Plates, \$22; Car Axles, \$28.50; Light Iron, \$9; Machinery Cast, \$12.50; Stove Plate, \$8.50; Cast Borings, \$7.50; Wrought Turnings, \$10; Axle Turnings, \$12.50; Mixed Steel, \$11; Coil Steel, \$14; Leaf Steel, \$15; Tires, \$15.

**Metal.**—Copper is higher; carload lots of Lake are now quoted 13¢, and casting brands 12½¢ @ 12¾¢. Indications point strongly to further advances. Spelter is quiet, but manufacturers believe that it will soon move upward. Prime Western is still quoted 4.85¢ @ 4.95¢. No advances have been received of any change in the Lead section.

The Chicago branch of the Moorhead McCleane Company, at 16 and 18 West Lake street, will hereafter be conducted by the C. H. B. Sheet Milling Company a corporation organized with a capital stock of \$100,000. The change has been made to facilitate the transaction of business and to enable the new company, they see fit, to handle such other products as may be desirable to advance their special interests. The new organization will have sole control of the Moorhead-McCleane Company's business in the Northwest as heretofore and will make that company's products a leading specialty. W. E. Stockton continues manager.

The Swarts Iron and Metal Company have purchased the large Scrap Iron yard, horses, wagons, &c., formerly owned by the National Forge and Iron Company, 551 to 557 State street, Chicago, and will carry on the business of buying and selling Scrap Iron, Steel and Metals in any quantity. Their facilities are excellent, and the yard is but a short distance from



nine leading railroads. Marks Swarts is president and Seymour Swarts is secretary and treasurer, both having had long experience in the Scrap-Iron business.

The Pottstown Iron Company of Pottstown, Pa., have established a Western office at Room 455, Rookery Building, Chicago, under the management of Oliver Haughey, who is well known in the Western Iron and Steel trades. The company are manufacturers of high-grade Iron and Steel Boiler and Bridge Plates, Tank Plates, Cut Nails and Spikes. Mr. Haughey also handles structural material and Manufactured Iron and Steel generally.

## Pittsburgh.

Office of *The Iron Age*, Hamilton Building, }  
PITTSBURGH, September 29, 1891. }

**Pig Iron.**—Demand continues fairly active, with more buyers than sellers for future delivery at present prices. Consumption is increasing, while production is about at a stand, hence there is no accumulation in first hands, which to the seller is considered an evidence of strength. Our city furnaces, which for some time past have been supplying nearly all the Iron consumed in this market, are now pretty well sold ahead and do not care to make contracts for future delivery at current rates. Very few furnaces at a distance are making any effort to do business here, from the fact that they can do better at home and elsewhere, and this, in connection with other points, to which it is unnecessary to refer, has caused a pretty general belief that there will be a stronger market in the near future, even if the expectations of the more sanguine are not realized. We quote prices as follows:

Neutral Gray Forge	.....	\$13.85 @ \$14.00, cash.
All-Ore Mill	.....	14.50 @ 15.00, "
White and Mottled	.....	13.00 @ 13.50, "
No. 1 Foundry	.....	16.25 @ 16.50, "
No. 2 Foundry	.....	15.25 @ 15.50, "
No. 3 Foundry	.....	14.50 @ 15.00, "
No. 1 Charcoal Foundry	.....	22.00 @ 22.50, "
No. 2 Charcoal Foundry	.....	21.00 @ 21.50, "
Bessemer Iron	.....	15.50 @ 15.75, "

Standard brands of Gray Forge are now pretty generally held at \$14, cash; sales of Bessemer were reported at \$15.50, cash, for immediate and \$15.75, cash, for later deliveries. Some of the brokers report an improvement in the foundry trade, while others have failed to discover it.

**Muck Bar.**—There is rather more inquiry, but no improvement in price, nearly all the business being at \$26.50, cash. There was a sale of 1500 tons of Southern Muck reported at \$26.40. There are buyers for assorted sizes, while the most of that offering is one size.

**Manufactured Iron.**—There is a continued good demand for nearly all descriptions of Manufactured Iron, and the mills here are all busy. Some of them were sold ahead and are pressed to make their deliveries. For all kinds of Merchant Iron there has not been such a demand for several years. The railroads are buying freely, as are also manufacturers of agricultural implements, who have had an unusually active season, and there is also a good demand for Sheet, Plate and Skelp Iron. Out in the Shenango and Mahoning valleys there is the same condition of affairs. The mills there are all well sold up, and it is difficult to get an order placed for immediate or even near-by delivery. Prices firm, but unchanged. City-made Iron is still quoted at 1.70¢ @ 1.75¢ for Bars; Plate and Tank, 2.05¢ @ 2.10¢; No. 24 Sheet 2.75¢, all 60 days, 2 % off for cash. Skelp Iron is quoted at 1.70¢ @ 1.72½¢ for Grooved and 1.90¢ for Sheared, four months, 2 % off for cash. The demand is more urgent for Narrow Grooved than any other kind.

**Structural Material.**—The activity which has characterized this branch continues. Manufacturers are pressed on every

side; building contractors are anxious to take advantage of the weather and get all the work done they possibly can before the storms set in and work cannot be prosecuted with anything like the same advantage. Prices firm, but unchanged. Channels and Beams, 3.10¢; Steel Sheared Bridge Plates, 2.15¢ @ 2.20¢; Angles, 2¢; Tees, 2.60¢; Universal Mill Plates, Iron, 2¢ @ 2.05¢; Refined Bars, 1.80¢ @ 1.85¢.

**Steel Plates.**—The demand continues and mills are working chiefly on old contracts. Boiler makers report that business has been very dull for some considerable time past and the inquiry from builders of lake vessels is also light, but there are indications of an improvement in the demand from both of the sources named. Prices remain unchanged: Fire Box, 3.85¢ @ 4.25¢; Tank, 2.05¢ @ 2.10¢; Shell, 2.15¢; Flange, 2.40¢ @ 2.55¢.

**Merchant Steel.**—An improved demand is reported, but prices remain unchanged: Crucible Tool Steel, 6½¢ @ 9¢; do. Spring Steel, 4¢; do. Machinery, 4½¢ @ 5¢; Bessemer Machinery, 2.30¢ @ 2.40¢; Toe Calk, 2.40¢ @ 2.50¢; Tire Steel, 2.20¢; Steel Bars, 1.80¢ @ 1.85¢.

**Ferromanganese.**—The market is firmer, but prices remain unchanged. Regular sales of 80 % domestic at \$66.50, cash. There is very little foreign Ferro sold here, as importers can do better in the seaboard districts. While there is no combination, it appears to be understood that manufacturers here will leave the seaboard markets to the importer so long as the latter keeps out of this market.

**Nails.**—Private advices from the Wheeling district report a considerably increased demand for Cut Nails, and with a continued light production and a very limited stock in the hands either of manufacturers or jobbers, a much firmer market is reported and prices are higher; we now quote at \$1.60 for 30¢ average, 60 days, 2 % off for cash. Cut-Nail manufacturers are again hopeful that their product will not be entirely supplanted by the Wire Nail, although statistics show that the latter continues to gain on the former. The Wire-Nail trade is reported light for the season and prices are weak; \$1.85, 60 days, 2 % off for cash, is the general price for immediate or near-by delivery; contracts cannot be made for future delivery at the price quoted. It is generally conceded that there is no margin at this price, and it is not strange that manufacturers are refusing to contract ahead, but are anxious to keep themselves in position so that in the event of an improvement they will be able to take advantage of the market.

**Wire Rods.**—No sales reported the past week, in the absence of which we quote at \$35, f.o.b. at makers' mill. There is some inquiry and there are no sellers here, so far as we can learn, below the price quoted.

**Wrought-Iron Pipe.**—There is a fair business, but it is not what it usually is at this season of the year; while the syndicate prices remain unchanged they are being cut considerably, and this is the most disagreeable feature of the business at the present time and confirms what we have already stated, that business is not what it should be and usually is at this season of the year. There is an increasing demand for small-sized Pipe, but large sizes have been neglected all this year, which may be attributed in part to the fact that there is not much doing in the way of natural gas development. The regular meeting of the Manufacturers' Association will take place in this city tomorrow, but it is not likely that there will be anything done with the exception of reaffirming former prices.

**Billets and Slabs.**—There has been an increased business in Billets the past week, sales of some 15,000 tons having been reported, mostly at \$25, cash, delivered on cars at makers' mill. Included in the sales was a lot of 5000 tons for nearby delivery at \$25, and 5000 tons for a later delivery at \$25.25.

**Old Rails.**—There is considerable inquiry, chiefly from consumers in the Shenango and Mahoning valleys, for Old Iron Rails, and with but few offering, the market is decidedly stiffer; we hear of offers of \$24 having been made and declined during the past week. Old Steel Rails continue neglected; may be quoted at \$17 @ \$18 for short and long pieces.

**Railway Track Supplies.**—There is a continued good demand for all kinds of Railway Track Supplies, but prices remain unchanged. Spikes, 2 10¢ @ 2.15¢, 30 days, f.o.b.; Splice Bars, 1.75¢ @ 1.85¢; Track Bolts, 2.75¢ with Square and 2.85¢ with Hexagon Nuts.

**Steel Rails.**—There is a continued good demand reported, but it is not so very urgent. Price remains unchanged at \$30, cash, f.o.b. mill Pittsburgh.

**Old Material.**—There is a fair business, but no change in prices. Sales No. 1 Wrought Railroad Scrap at \$19 50 @ \$20, net ton; Cast Scrap, \$13.50, gross; Leaf Spring Steel, \$20 @ \$20.50, gross. Sale 1500 tons Steel Bloom Ends at \$18, gross.

**Connellsville Coke.**—There is nothing especially new to note, with the exception that cars are not as easily obtained as they have been, which is owing to a big demand for them to move the crops. However, there does not appear to be any very great complaint. Prices are unchanged.

## Cleveland.

CLEVELAND, September 28, 1891.

**Iron Ore.**—The market begins to show signs of activity again. Inquiries during the past week have been numerous, although no very large quantities of Ore have been sold. Some scattering lots of Non-Bessemer, to go east of the Alleghenies, have been disposed of at \$3 75 @ \$4, f.o.b. cars Buffalo. A few unimportant purchases have also been made by valley furnacemen. Efforts have been made during the past week to advance quotations in accordance with the increased cost of transportation, but buyers will not pay the extra price, so entirely out of harmony with the present condition of the Pig-Iron market. The cost of bringing down Ore from the Lake Superior district has been advanced to \$1.05 @ \$1.10 from Escanaba, \$1.20 @ \$1.25 from Marquette and \$1.35 @ \$1.40 from Ashland and Two Harbors. Although these rates of transportation indicate another slight advance in quotations for new Ore, the change has not yet taken place. It is admitted, though, that when buyers and sellers get a little nearer together in their views regarding Ore values a considerable quantity of this year's prospective output will be sold. For the week just closed the receipts of new Ore at Cleveland have aggregated 71,000 tons, and at all lower lake ports combined about 240,000 tons, against 52,000 tons for Cleveland and 170,000 tons for all lower lake ports in 1890. Shipments to the furnaces are correspondingly heavier, 45,000 tons having gone on from Cleveland, as compared with 31,500 for the same week in 1890.

**Pig Iron.**—Without recording any actual advances in quotations it may be said that prices are very firm at the figures given below. The demand has steadily increased and the dealers are confident that their hopes of a substantial improvement in both inquiries and prices will soon be realized. Sales of Bessemer at

figures slightly better than \$16 are reported, but sellers are in no mood, apparently, to force the market, preferring to await developments. Better prices are confidently looked for early in October. Following are strictly cash quotations:

No. 1 to 6 Lake Superior Charcoal	\$18.50 @ \$19.00
No. 1, 2 and 3 Bessemer, per ton.	16.00 @ 16.25
No. 1 Strong Foundry, per ton.	16.20 @ 16.70
No. 2 Strong Foundry, per ton.	15.20 @ 15.70
No. 1 American Scotch, per ton.	16.20 @ 16.70
No. 2 American Scotch, per ton.	15.20 @ 15.70
No. 1 Soft Silvery, per ton.	16.50 @ 17.50
Mahoning and Shenango Valley	
Neutral Mill Irons, per ton.	14.00 @ 14.50
Mahoning and Shenango Valley	
Red Short Mills, per ton.	14.00 @ 14.50

**Nails.**—The market is steady and unchanged. Steel Cut Nails are quoted at \$1.70, and Steel Wire Nails at \$2, in stock, with a good demand.

**Manufactured Iron.**—The enormous demand continues. Common Bar is still quoted at 1.65¢ @ 1.70¢ from the mills, most of which are engaged until the first of next year.

(By Telegraph.)

The Ore men succeeded to-day in cutting down the rates of transportation from Escanaba to 95¢ and other rates correspondingly. This reduction has encouraged buyers considerably and a number of sales are reported. The Pig-Iron market has been given new life and the whole outlook is brighter.

## Cincinnati.

(By Telegraph.)

Office of *The Iron Age*, Fourth and Main Sts., Cincinnati, September 30, 1891.

There continues to be a confident undertone to the market, and yet there is no difficulty experienced by consumers in buying adequate supplies for their current wants and for delivery this year at previous prices. There have been liberal sales during the week of Gray Forge, Mottled, Silver Gray, No. 1 Foundry and Southern Car-Wheel Iron, the aggregate being over 40,000 tons, mainly for this year's delivery, but some running a little into next year. Some sales for the first half of next year were made at an advance of 25¢ per ton. This advance is generally asked for the first four months of next year, and some recent sales have been effected. The sales reported alone were made mainly to Stove works and to Car builders, but there is considerable increase in the melting of Iron by Iron Pipe works, for there is a decidedly better feeling prevailing in that line of trade, due to an enlarged demand for Pipe. This feature is observable in all the leading consuming interests, and is doubtless the reason why the very large production of Pig Iron is apparently absorbed, leaving little, if any, increase in stocks. There is no apparent effort to boom the market, for it is thought for the highest interest of the trade to promote consumption by supplying the demand at current prices and let the natural increase in the wants of consumers bring about a legitimate advance, which the assured prosperity of the country will sooner or later effect. There is no change in quotations:

### Foundry.

Southern Coke, No. 1.	14.75 @ 15.00
Southern Coke, No. 2.	13.50 @ 13.75
Southern Coke, No. 3.	13.00 @ 13.25
Ohio Soft Stone Coal, No. 1.	16.50 @ 17.00
Ohio Soft Stone Coal, No. 2.	15.50 @ 16.50
Mahoning and Shenango Valley.	17.00 @ 17.50
Hanging Rock Charcoal, No. 1.	20.00 @ 21.00
Hanging Rock Charcoal, No. 2.	19.00 @ 20.00
Tennessee and Alabama Charcoal, No. 1.	16.00 @ 17.00
Tennessee and Alabama Charcoal, No. 2.	15.00 @ 16.00

### Forge.

Gray Forge	12.50 @ 12.75
Mottled Neutral Coke.	12.00 @ 12.25

### Car Wheel and Malleable Irons.

Standard Southern Car Wheel.	19.25 @ 19.75
Hanging Rock, Old Blast.	25.00 @ 26.00
Lake Superior Car Wheel and Malleable.	18.00 @ 18.50

## New York.

Office of *The Iron Age*, 96-102 Reade street, New York, September 30, 1891.

**American Pig.**—The accounts are somewhat conflicting, some of the sellers reporting considerable activity, while leading consumers state that they are still in receipt of offers at low prices. Thus we hear of \$14.50, delivered, being made on plain No. 2 Lehigh, and of relatively low prices on No. 2 Southern in the Boston market. Northern brands are quoted at \$16.75 @ \$18 for No. 1; \$16 @ \$16.50 for No. 2, and \$14 @ \$14.50 for Gray Forge. Southern Irons sell at \$16 @ \$17 for No. 1; \$15.25 @ \$16 for No. 2; \$15.50 @ \$16 for No. 1 Soft, and \$14 @ \$14.50 for Gray Forge.

**Spiegeleisen and Ferromanganese.**—During the week under review an Eastern Steel works has purchased 10,000 tons of German Syndicate 20 % Spiegeleisen at private terms, while another concern has contracted for 13,000 tons of 10 to 12 % German Spiegeleisen in two blocks. It is probable that the consumption of the lower grade of Spiegel will somewhat increase in this country in consequence of the tendency among some of the mills to make their Rails higher in carbon. We quote 10 to 12 % Spiegeleisen \$23.75 @ \$24, and 20 % \$27.50 @ \$28, for German and English. The frequent reports of concessions in price in the Western market below equivalent of the tidewater price for Ferromanganese seem to have had their effect upon some of the foreign sellers, who show a disposition to give their representatives in this country authority to meet any cuts. In the absence of any business quotations are nominal.

**Billets and Rods.**—The market is again disturbed by reports of low prices on Billets in the West, Eastern sellers holding at about \$27 @ \$27.25 near tidewater. There is nothing doing in foreign. Wire Rods continue quiet at \$37.50 @ \$38.

**Swedish Stock.**—Consumers claim that they are able to purchase Swedish Iron under the figures which some of the leading importers name, but show no disposition to stock heavily. Rivet Rods continue \$58.50 @ \$59, while \$66.50 @ \$67 may be quoted nominally for Bars, jobbers' specifications.

**Manufactured Iron and Steel.**—Our local mills are quite busy and some new work is coming up. Bridge builders are now figuring on the McComb's Dam Bridge, and some contracts for large buildings are to be closed to-day. In Plates low prices are being named by Pittsburgh mills. In Bars, a mill which is a large seller in the market placed a block of 500 tons at 1 62½¢, and advanced the price to 1.65¢, at mill, for a lot of like magnitude for New England delivery. We continue to quote: Angles, 1.90¢ @ 2.10¢; Sheared Plates, 1.95¢ @ 2.25¢; Tees, 2.45¢ @ 2.75¢, and Beams and Channels, 3.1¢, on dock. Steel Plates are 1.95¢ @ 2.15¢ for Tank; 2.20¢ @ 2.30¢ for Shell; 2.45¢ @ 2.65¢ for Flange; 2.65¢ @ 2.75¢ for Marine, and 3¢ @ 3.25¢ for Fire Box, on dock. Bars are 1.7¢ @ 1.9¢, on dock. Scrap Axles are quotable at 2.15¢ @ 2.20¢, delivered. Steel Axles, 2.15¢ @ 2.25¢, and Links and Pins, 2.15¢ @ 2.20¢.

**Steel Rails.**—Sellers report a number of small transactions, important in the aggregate, but no large business. It is reported that the Pennsylvania Railroad, the Long Island and others are negotiating for Rails. Persistent efforts are again being made to create the impression that prices are being cut. We have the authority of the sales agents of the leading mills for the statement that this is not the case. They emphatically deny it. The allotment of the Maryland Steel Company has been arranged for. We understand that the distribution of percentages as now pro-

vided for is to hold good until July 1, 1892. It is stated that the percentages have been arranged in the following manner: The Maryland Steel Company have been put on the basis of 8 %, with the others remaining the same. The total of 108 % thus reached has been cut down pro rata among all the mills so as to reach a total of 100 %. There is considerable interest in the business in light Steel Rails. The Lackawanna Company quote carload lots of different sections as follows, with an abatement for large lots: 20 lb, \$37.50; 25-lb, \$34.50; 30-lb, \$33; 35 lb, \$32; 40-lb, \$31.50, and 45 and 46 lb, \$31, at mill. Girder Rails may be quoted \$40 @ \$42, delivered. Standard sections, large blocks, \$30 80, tidewater, New York.

**Track Material.**—We quote 2.25¢ for Spikes; 1.75¢ @ 1.80¢ for Fish Plates, and 2.80¢ @ 3¢ for Bolts, delivered.

**Merchant Steel.**—We quote Hot-Rolled Shafting 2.05¢ @ 2.10¢; Machinery, 2.15¢ @ 2.25¢; Tire, 2.20¢ @ 2.25¢, and Toe Calk, 2.25¢ @ 2.30¢, delivered.

**Old Material.**—Only one important transaction is noted during the week, the sale of 2500 tons of Old American Iron Rails at \$22 on track, in this State. Old Steel Rails are weaker in this market, being offered freely at \$16.50 @ \$17. There is more offering also of Rolling Mill Scrap, Plate Shearings having been offered at \$18, delivered.

Field, Lindley, Wiechers & Co., 1 Broadway, have been appointed sales agents for the Manganese Ore produced from the Las Cabesses mines near St. Giron, Ariège, France, whose product is about 200 tons per day. Calcining kilns are being built to be running in December, when the grade will be carried up to 60 %, Manganese. Phosphorus is reported as 0.015 %.

## Financial.

Temporary disturbance in speculative circles, caused by the failure of a leading grain operator, followed by the Missouri Pacific's failure to make a dividend, had an unsettling effect on the market for commodities and is supposed to have hardened the rates for money. But the underlying conditions upon which are based all calculations of future prosperity remain unchanged. Granaries are overflowing sufficient to fill all the channels of transportation and to supply the wants of Europe. Then gold is returning at the rate of about \$12,000,000 in a fortnight, a single steamer, La Touraine from Havre, bringing over \$3,100,000 at a trip. Added to other influences which contribute to the growing confidence and consequent stability in monetary affairs is the explicit declaration against free silver coinage not only by the highest official authority, but by representative leaders of both political parties. Liverpool cables report wheat a shade lower and in this market there is less export buying, especially for the Continent, on account of the glut of arrivals at Hamburg and Antwerp, but reaction will stimulate demand. Primary receipts last week were the largest on record and equaled nearly 8,250,000 bushels, and for four weeks exceeded 30,000,000. The export clearances equaled about 5,000,000 bushels, and for the past four weeks equaled about 21,000,000 bushels. Exports for the corresponding time last year were scarcely one-fifth of this amount. Respecting cotton, there has been a more active speculation, stimulated by unfavorable crop reports and reduced estimates of the yield; as a result prices have advanced ¼¢ to ½¢ per pound. The volume of business, taking the country all through, was well maintained, the total clearances of 60 cities showing an increase of 18 6 % compared with last year. Outside of New York the increase was 7.6 %. The



gain in New York was manifestly due to activity on the Stock Exchange. At Baltimore and Pittsburgh there was a decrease.

The stock market was unsettled. Missouri Pacific was sharply broken down because of the failure of the directors to declare the usual quarterly dividend. At the same time there was free selling of Union Pacific on a rumor that there was a hitch in the negotiations for extending the floating debt. On Saturday the whole market was strong until free selling of Missouri Pacific carried that stock to 61½, the lowest price yet recorded, making a total decline during the week of 14½%. The plan to provide for the floating debt of the Union Pacific road by extending its notes for three years was carried to a successful end. Within two hours after Drexel, Morgan & Co. opened the books for subscriptions to \$5,500,000 of the extension notes nearly the whole amount was received. The work of arranging the placing of the notes, carried through by the committee, is considered one of the most gigantic feats of financial engineering on record. The company will now issue \$12,500,000 of the extension notes to creditors who signed the agreement. A balance of \$6,000,000 is left which may be issued by the company from time to time if the committee sanction such issue, but the company cannot increase their debt by a dollar if the committee object to it. Tuesday's market seemed to lend confirmation to the theory that there is to be some sort of compromise between the Vanderbilts and the Gould interest. But the break in Erie was the most interesting feature of the market.

Government bonds were without sale at the board, but the market was steady. Quotations as follows:

U. S. 4½s, 1891, extended.....	99½
U. S. 4s, 1907, registered.....	115½
U. S. 4s, 1907, coupon.....	116½
U. S. currency 6s.....	110½

State bonds were quiet. North Carolina consol 4s sold at 98½, and Tennessee settlement 3s at 70. Silver certificates declined ½ to 98.

Money was more active, partly due to the disturbance of loans. Commercial paper was quiet, with the business chiefly confined to Eastern buyers, and scarcely anything was done below 6%. Rates were nominally 5½ to 6% for 60 to 90 day indorsed bills receivable, 6 to 6½ for four months' acceptances, and 6 to 7 for good single names having from four to six months to run. The bank return showed a loss of \$4,228,200 in cash and of \$3,748,625 in surplus reserve, leaving the latter at \$4,008,125. Exchange was lower in consequence of a pressure of arbitrage and commercial bills, but the fall was gradual because of a demand to cover imports of gold. The posted rates closed at \$4.81 for long and \$4.84 for short.

Exports for the week \$7,689,000 from this port; imports, 10,370,000.

The commercial markets show little animation. Continued hot weather over a large section of country has delayed the retail movement and consequently the general distribution through larger channels. The dry goods wholesale market is steady and collections are good, the South showing decided improvement.

## Coal Market.

The Anthracite Coal trade agents on Tuesday discussed the situation and agreed that the market would bear an allotment for October of 3,250,000 tons, or a total of 3,750,000 tons if all supplies are included. The agents speak of prices as being "well sustained," which is misleading. Intelligent men in the wholesale trade do not, as a matter of fact, regard the market as well sustained in any proper sense, as Coal has not, as a rule, up to the present date

been sold above the July circular, although there have been two nominal advances since. Indeed, figures a shade lower would most nearly approximate to the actual market. The last advance officially announced is assumed to take effect October 15. Although, as confessed, the market is dull and weak, prices are stronger and improving slowly, and, as believed, must advance with seasonable weather. As the case stands grave doubt is expressed whether the market can, under any circumstances, stand up under the heavy allotment just agreed upon. Already the increase is nearly 3,000,000 tons over last year. The production for the week ending September 19, was 830,678 tons.

Bituminous Coal is quiet, but there is an increase of transient orders, which amount to considerable and will soon be more numerous.

Coal carriers are getting only 40¢ to 50¢ per ton to Boston, which are about the lowest figures ever known. Large supplies are finding their way by the land routes, and, in fact, the competition from this source grows and exercises a steadily adverse influence on the coastwise business.

A fierce fire is burning in the lower workings of the Delaware and Hudson Canal Company's large Conygham Colliery in Wilkesbarre, Pa. The mine is one of the best of the brace of collieries owned by the company, and has been idle in part for several months, owing to the water, which had gained control of the gangways and shaft, so that the regular pumps could not be utilized. The time required to fill the vein and then pump it out will reach nearly to February 1.

The prices named in the October circular are as follows:

	Broken.	Egg.	Stove.	Chest-nut.
Lehigh.....	\$4.00	\$4.30	\$4.40	\$4.15
Free.....	3.75	4.15	4.40	4.15

Which is an advance over September of 10¢ for Broken; Egg and Stove, 15¢; Chestnut, 15¢. Coal is selling now, company prices, less 15¢ commission, Lehigh Broken, \$3.90; Egg, \$4.15; Stove, \$4.25; Chestnut, \$3.90. Lehigh operators remain independent, and are satisfied with the amount of business offered. Lehigh Pea is about \$2, f.o.b.; Free-Burning Pea, \$2.10 @ \$2.50, according to quality; Buckwheat, \$1.50 @ \$1.60.

Cumberland reports for the week ending September 19, 79,737 tons, and for the year, 3,043,000, against 2,721,000 for the same time in 1890. Clearfield, 59,000 tons; Beech Creek, 66,000 tons; C. & O., 48,000 tons; Pocahontas, 50,000 tons; Pennsylvania Railroad, 264,700 tons; Reading, 241,814 tons.

## Metal Market.

**Copper.**—In addition to the sales recorded last week there have been transactions involving upward of 500,000 lb Lake Superior product for delivery during the balance of the year at 12½¢, making a total of not less 1,500,000 lb sold here during the past fortnight at 12½¢ @ 12½¢. Of that quantity a considerable portion was for electrical purposes, but the purchases by manufacturers of Copper and Brass goods were of good amount. At present there is a fair demand from the latter interest, but inquiries for Cakes and Bars figure more conspicuously and indicate that the consumption of the metal for electrical purposes is gaining headway. Ingot may be secured at 12½¢, or a shade less, for prompt or near future delivery, in limited quantities, but Cakes and Bars at less than 12½¢ for forward shipment are not obtained. Arizona Ingot appears to be rather scarce, with 12¢ a strictly inside price and 12½¢ generally asked. For casting brands there is nothing more than a routine demand at present,

but the offering is reserved and prices are held at 11½¢ @ 11½¢. Shipments of Matte to this port by rail from San Francisco continue. The ship Commodore T. H. Allen, which left on the 22d ult., had 292 tons.

**Pig Tin.**—The market has remained almost stationary throughout the week. Speculative interest has centered chiefly around "puts," and while spot stocks are known to be heavy, the "deal" is in such shape that the "bull" element, profiting by the firmness of the London market, succeed in holding their own without taking further liabilities. The out-of-town outlet, being diligently looked after and supplied with Tin at prices very close to the net cash rates quoted on the Exchange, is still kept to the front as an important factor in offsetting the natural bearing of heavy supplies. Business has been done at as low as 20¢, net cash, but the market is back to 20.10¢ for October and 20.15¢ for December delivery, with the undertone firm. Ordinary jobbing quantities have been sold chiefly at 20.25¢ @ 20.40¢, as to terms. The Dutch sale of Billiton went at an average of 54½ florins. Straits shipments during September were wired as 1575 tons to Great Britain and America.

**Pig Lead.**—Transactions in this metal have been on a rather smaller scale the past week, and the demand from corrosion and other consumers is momentarily tame. Single carload lots for delivery in November and December were sold at 4½¢ @ 4.52½¢, Exchange terms, but larger quantities brought full as much money in the regular way, and the offering by producers at less than 4.55¢ is apparently very light at the present time. As a matter of fact 4.57½¢ and upward is asked.

**Spelter.**—Transactions have been on a smaller scale the past week, but the market retains a fairly strong undertone, particularly for prompt deliveries. Prime Western brought as much as 5.20¢ on the spot, in fair-sized lots, and at less than 5.15¢ there is little, if any, available at this writing. Future shipments sold at 5.05¢ @ 5.10¢, according to brand, and at the close it looked doubtful that even the least favored makes could be secured at the inside figure.

**Antimony.**—The local agent for one prominent brand has temporarily withdrawn offers at old prices, and that fact, along with fair demand, gives the general market more tone. Hallett's is quoted at 10½¢ @ 10½¢, LX at 10½¢, L. J. & C. at 11¢ and Cookson's at 12½¢, in wholesale quantities.

**Tin Plate.**—Business has been of very moderate proportions and confined almost wholly to small lots of goods for immediate delivery. Spot stock is relatively a great deal cheaper than any offered for shipment from the foreign market, and the supply here is believed to be only fair. Still, buyers appear content to take their chances on the future. We quote: Coke Tins—Penlan grade, IC, 14 x 20, \$5.35; J. B. grade, do., \$5.45; Bessemer do., \$5.40; Siemens Steel, \$5.50; Stamping Plates—Bessemer Steel, Coke finish, IC basis, \$5.75; Siemens Steel, IC basis, \$5.85 @ \$6; IX basis, \$6.85 @ \$7. IC Charcoals—Melyn grade, \$6.50; for each additional X add \$1.50; Allaway grade, \$5.85; Grange grade, \$5.90 @ \$5.95; for each additional X add \$1. Charcoal Terns—Worcester, 14 x 20, \$5.70; do., 20 x 28, \$11.50; M. F., 14 x 20, \$7.50; do., 20 x 28, \$15.50; Dean, 14 x 20, \$5.40; do., 20 x 28, \$10.60; D. R. D. grade, 14 x 20, \$5.25; do., 20 x 28, \$10; Mansel, 14 x 20, \$5.30; do., 20 x 28, \$10.25; Alyn, 14 x 20, \$5.35; do., 20 x 28, \$10.35; Dyffryn, 14 x 20, scarce; do., 20 x 28, \$11.20 Wasters—S. T. P. grade, 14 x 20, \$4.90; do., 20 x 28, \$9.85; Abercarne grade, 14 x 20, \$4.90; do., 20 x 28, \$9.65.

**New York Metal Exchange.**

The following sales are reported :

FRIDAY, SEPTEMBER 25.		
10 tons Tin, spot.....	20.15¢	
25 tons Tin, last half of October.....	20.22½¢	
MONDAY, September 28.		
10 tons Lead, November.....	4.52½¢	
32 tons Lead, December.....	4.50¢	
TUESDAY, September 29.		
25 tons Tin, December.....	20.15¢	

**St. Louis.**

OFFICE OF *The Iron Age*, 214 N. Sixth st.,  
St. Louis, September 28, 1891.

**Pig Iron.**—There have been no large transactions during the week. A steady demand for medium-sized lots, however, is reported, and at prices that are about 25¢ per ton higher than those quoted two weeks since. Sellers are not pushing sales to any extent, and are apparently content to wait until the movement toward higher prices becomes more pronounced. Inquiries for delivery later than this year are not quoted on, as the feeling among sellers is becoming more prevalent that a higher range of values will be in order after the new year has opened, if not before. The outlook is quite encouraging, and the condition of trade in general warrants the statement that higher prices are almost assured. Consumption keeps up remarkably well, and from inquiries received the different manufacturers in this vicinity will have plenty of work from this time on. Prices, as stated above, are stronger. We quote as follows for cash, f.o.b. St. Louis:

Southern Coke, No. 1 Foundry.....	\$15.50 @ \$15.75
Southern Coke, No. 2 Foundry.....	14.50 @ 14.75
Southern Coke, No. 3 Foundry.....	13.75 @ 14.00
Gray Forge.....	13.25 @ 13.50
Southern Charcoal, No. 1 Foundry.....	17.00 @ 17.50
Southern Charcoal, No. 2 Foundry.....	16.50 @ 16.75
Missouri Charcoal, No. 1 Foundry.....	15.50 @ 16.00
Missouri Charcoal, No. 2 Foundry.....	15.00 @ 15.50
Ohio Softeners.....	17.75 @ 18.75

**Bar Iron.**—The activity noted in our last report continues, and mills are crowded with orders. Prices are strong and are firmly adhered to, as follows: Car lots from mill are quoted at 1.72½¢ @ 1.77½¢. Small lots from store are quoted at 1.85¢ @ 1.90¢, according to quantity.

**Wire Nails.**—There is no particular change to note in this department. The demand is slightly better at prices as quoted herewith: Carload lots, \$2.10; small lots from store, \$2.25.

(By Telegraph.)

**Pig Lead.**—The movement is somewhat restricted, as consumers have bought all they require for the present. Sales during the week amounted to something over 600 tons, at 4.35¢. The market is strong and a bullish feeling prevails; the Spelter market is somewhat improved; inquiries received indicate that consumers are testing the market and an increased demand is anticipated. Spot deliveries are quoted at 4.70¢ @ 4.75¢. Sales during the week have been light.

**Detroit.**

**WILLIAM F. JARVIS & Co.,** Detroit, Mich., under date September 28, 1891, say: The activity noted in our last report has not diminished during the week, and buyers have shown a willingness to make contracts extending as far into next year as they can at present prices. However, when furnaces ask a premium for deliveries beyond the first of the year they decline to pay it. While some furnaces are booking orders for deliveries extending for six to nine months, others will not quote for de-

livery beyond the present year. More demand is being made for Strong Ohio Irons than at any time within the past year. This may be partially accounted for by some furnaces, whose Irons are well and favorably known to the trade, having again announced their intention of entering the list of active competitors in this market. Lake Superior Charcoal is active and firm. Southern furnaces willing to contract for early part of next year have had no trouble to close several large deals. Ohio Soft Irons are in good demand and an advance of 25¢ has been made on a few favorite brands. With a good demand and with tendency to higher prices, we quote as follows:

Lake Superior Charcoal, all numbers.....	\$18.00 @ \$18.50
Lake Superior Coke, Bessemer.....	17.75 @ 18.50
Ohio Blackband (40 per cent.).....	18.00 @ 18.50
Lake Superior Coke Foundry, all ore.....	17.50 @ 18.00
Southern No. 1.....	16.25 @ 16.50
Southern Gray Forge.....	14.00 @ 14.50
Jackson County (Ohio) Slavery.....	18.25 @ 18.75

**British Iron and Metal Markets.**

[Special Cable Dispatch to *The Iron Age*.]

LONDON, WEDNESDAY, September 30, 1891.

Operations in Scotch Pig Iron warrants have been rather more active during the past week, but prices have receded slightly under freer offering. A large business has been done in Cleveland warrants and Hematites have averaged lower on moderate trading. Connal's stocks remain almost stationary, the latest returns showing 503,000 tons Scotch and 151,000 tons Cleveland. There are now 75 Scotch furnaces in blast. Latest sales of warrants were at 47/2 @ 47/3 for Scotch, 40/6 for Cleveland and 50/6 for Hematite.

Pig Tin prices were steady early in the week at about £91. 5/ for prompts, but subsequently advanced to £91. 15/ under the influence of outside speculative purchases induced by recent small shipments from the Straits. This rise brought out freer selling on Monday that caused a decline of 5/, and the market has since been quiet.

Copper has been dull and rather unsettled throughout the week and prices have averaged somewhat lower. The decline is attributed to freer sales by dealers and falling off in deliveries, together with rumors of increase in Chili charters. The demand from consumers is steady.

For Tin Plate there has been a fair inquiry, but not much business has been consummated. Makers hold firmly to their former prices and refuse to book orders at the figures generally offered. Some increase in shipments is noted.

Finished Iron of most descriptions is firm at 5/ advance on late prices.

There is more doing in Old Material, and some quite large shipments have been made.

**Scotch Pig Iron.**—There is only a moderate business in makers' Iron, and prices show little change.

No. 1 Coltness, f.o.b. Glasgow.....	58/6
No. 1 Summerlee, " ".....	57/
No. 1 Gartsherrie, " ".....	57/
No. 1 Langloan, " ".....	58/
No. 1 Carnbroe, " ".....	48/6
No. 1 Shotts, " at Leith.....	50/6
No. 1 Glengarnock, " Ardrossan.....	57/6
No. 1 Dalmeilington, " ".....	51/
No. 1 Eglinton, " ".....	50/
Steamer freights, Glasgow to New York, 2/;	
Liverpool to New York, 10/.	

**Cleveland Pig.**—The movement continues very fair, and prices are steady at 40/6 for No. 3 Middlesborough, f.o.b.

**Bessemer Pig.**—Demand is rather slow, but prices are firmly held at 51/ for West Coast brands, Nos. 1, 2 and 3, f.o.b. shipping port.

**Spiegeleisen.**—Movement continues slow, but sellers' ask former prices. English 20 % quoted at 95/, f.o.b. shipping port.

**Steel Rails.**—No improvement in the demand or further change in prices. Heavy sections quoted £4. 2/6, and light sections £4. 10/ @ £5, f.o.b. at N. W. England shipping point.

**Steel Blooms.**—The market is quiet and unchanged. Makers quote £4. 5/ for 7 x 7, f.o.b. at N. W. England shipping point.

**Steel Billets.**—Sales are moderate and at old prices. Bessemer, 2½ x 2½ inches, quoted at £4. 7/6, f.o.b. at N. W. England shipping point.

**Steel Slabs.**—Business slow and prices without change. Bessemer quoted at £4. 7/6, f.o.b. at N. W. England shipping point.

**Old Iron Rails.**—Under fairly good demand the market is quite firm. Tees quoted at £3 @ £3. 2/6 and Double Heads £3. 2/6 @ £3. 5/, f.o.b.

**Scrap Iron.**—There is a very fair demand and prices are steady. Heavy Wrought Iron quoted at £2. 10/ @ £2. 12/6, f.o.b.

**Crop Ends.**—Dealings moderate at about former prices. Bessemer quoted at £2. 12/6 @ £2. 15/, f.o.b.

**Tin Plate.**—Demand still runs light, but sellers hold firmly. We quote, f.o.b. Liverpool:

1C Charcoal, Alloway grade.....	15/6 @ 16/
1C Bessemer Steel, Coke finish.....	13/9 @ 14/
1C Siemens.....	14/ @ 15/
1C Coke, E. V. grade.....	13/6 @ 14/
Charcoal Terne, Dean grade.....	13/6 @ 13/9

**Manufactured Iron.**—There has been further improvement in the demand, and the market is quite firm. We quote, f.o.b. Liverpool:

Staff. Marked Bars.....	£ s. d. @ 8 10 0
" Common ".....	6 15 0 @ 6 17 6
Staff. Bl'k Sheet, singles.....	7 10 0 @ 7 12 6
Welsh Bars (f.o.b. Wales).....	5 10 0 @ 5 12 6

**Pig Tin.**—Market quiet at the close, but firm. Straits quoted at £91. 2/6, spot, and £91. 17/6 for three months' futures.

**Copper.**—Demand without improvement and prices rather weak. Merchant Bars quoted at £51. 5/, spot, and £51. 15/, three months' futures. Best Selected, £55.

**Lead.**—There is a fair trade and prices are steady. We quote at £12. 5/ for Soft Spanish.

**Spelter.**—The market has remained steady at £23. 15/ for ordinary Silesian.

The New York and New Jersey Terminal Company filed an application last week in the office of the Commissioners of Land in Albany for a grant of the right of way for a railroad under the Hudson River. The company propose to start the four-track tunnel at the Hackensack Meadows, and pass under the river to Fourteenth street, where a mammoth underground depot is to be built. Beyond the station toward the East River are to be the terminal tracks for switching trains. Branch lines will be constructed to carry passengers up or down town. The estimated cost is \$16,000,000.



# HARDWARE.

## Condition of Trade.

**B**USINESS CONTINUES without material change in volume and with some difference in the tone of the demand in the various Hardware centers, in some of which a large and very satisfactory business is doing. In others, however, some disappointment is still expressed as to the backwardness of trade. The exceptionally fine weather which has prevailed has doubtless contributed to this, but merchants are disposed to regard with equanimity such postponement of business, as the time has been profitably utilized by the farmers and great benefit has accrued to the crops. The volume of business is, however, unquestionably large, and the outlook continues exceedingly favorable. Prices show as yet no sign of general improvement and may be characterized as on the whole lacking in strength. The changes which have taken place in the market are comparatively few, the most striking being the reduction in the price of Barb Wire announced by the Columbia Patent Company, as per our special telegraphic report from Chicago, the new prices going into effect October 1. There is still some complaint as to the sluggishness of collections, but in this respect the market appears to be constantly improving.

### Chicago.

(By Telegraph.)

Shelf hardware jobbers are busy, but reports vary as to the degree. Some houses characterize their trade as immense, while others, and very important ones they are, refer to their business as quite satisfactory but still far short of employing their full facilities. The hot weather of the past two weeks must have exerted an unfavorable influence on the demand for winter goods, but of course any lull in that direction will only lead to increased activity with the appearance of a cold snap, which can be expected at any time. Now that the corn crop is safe an immense trade in Hardware is confidently anticipated, as every agricultural section has been favored with abundance this year. More than that, the farmers are receiving very remunerative prices, which do not often accompany immense crops. Shelf goods still constitute the bulk of the trade, but an early movement in staple goods is expected. Prices are not quotably changed.

### St. Louis.

(By Telegraph.)

The large business in Hardware which we have noted from week to week continues and jobbers are kept very busy.

The fall trade has opened up in good shape, and while the Southern trade is not particularly heavy, the increased demand from the North and Northwest makes the average business very satisfactory. A large trade is noted in Shelf Goods. There is an increased demand for Copper, as from the prices at present ruling it is quite evident that Copper is a good article to buy. There are no particular changes to note, so far as prices are concerned. Collections are improving in some sections, while in others money is extremely tight.

### Cleveland.

**THE W. BINGHAM COMPANY.**—The volume of business increases as we get further into the season, with a flattering outlook for the future. There is nothing new to note in the way of prices. Notwithstanding the splendid prospects in the way of large crops at high prices, and the consequent increasing trade, prices remain remarkably low, with no inclination on the part of merchants to place speculative orders. The demand for fall goods is brisk, especially on sheet iron, and the mills are all behind on their orders. Skates are selling freely, and if we have propitious weather the sale will be unusually large.

### Baltimore.

**CARLIN & FULTON.**—The warm, sultry weather which has prevailed for the last two weeks hardly suggests the fact that one month of the fall season has now passed and is not calculated to stimulate the demand for such seasonable goods as Coal Hods, Fire Dogs, Shovels and Tongs, Meat Cutters, &c., but nevertheless, with the expectation that a change in the temperature will eventually happen, the sale of such goods is quite active. By the law of compensation our personal discomforts on account of the extreme heat are more than made up for by the great benefit to the corn and cotton crops, the latter staple requiring just such dry, hot weather in order that the bolls may open and that picking may progress. From general reports the light trade which we have had this summer and early fall from the more southern States will be followed later on by an active demand for goods of all kinds; and in the meantime, especially from that section, business continues in a most conservative way, collections being probably up to the average, failures no more frequent than usual, and the country generally in about as sound a condition financially as it has been for years.

### Louisville.

**W. B. BELKNAP & Co.**—There is a good volume of business doing, and no complaint in regard to prices. No matter how large the demand, the wonderful resources of our furnaces and factories seem quite equal to it, and talks of advances are treated nowadays with more or less in-

credulity. While the consumption, for instance, of Bar Iron has increased materially, owing to the demand for railroad equipment, structural purposes, &c., we are kept fully advised that the product of Pig Iron is at a maximum, and hence there is no fear of scarcity in the immediate future. The outlook for business, however, continues to improve as the later crops become more and more assured. The hot weather of the past two weeks, while trying to the flesh, has been most beneficial to the fields, and the farmer smiles through his coat of dust as he sees the fall nubbins fill out into full-grained ears. A good deal of fall plowing is already done, and the acreage for spring wheat, owing to the stimulus of high prices, this year promises to be large. Just now the drought is beginning to tell, and rain would be acceptable throughout the whole Western and Southern country.

Carefully collated reports in New Orleans show that the reported damage to the cotton crop by rust, worm, wet or premature opening of the bolls has been exaggerated, and that it has not suffered in the Mississippi Valley more than a loss of 10 or 15 per cent. from the high estimates. Moreover, the quality promises to be good, insuring a better price than last year. While last year's crop was extremely large, the quality was mainly poor. The railroads appear to be full of business and complain of lack of rolling stock. This complaint will be aggravated by the fact that the rivers are low and nothing can be shipped from Pittsburgh or Wheeling districts at present by boat. Locally the financial situation is much improved, and loans for legitimate purposes on good securities are easily obtained, but with all this, money is not yet plenty enough to encourage the presence and labors of the whilom "promoter." That individual disappeared a year ago and his cheerful voice has not since been heard, except every now and then as defendant to a law suit. He may not be dead, but he is certainly sleeping.

### Portland, Ore.

**FOSTER & ROBERTSON.**—Harvest, except in the extreme northern portion of our territory, is drawing rapidly to a close; grain is beginning to go forward to market, and as a natural consequence money is getting more plentiful and collections much easier. Orders, both from travelers and by mail, are of better size and more numerous than for some weeks past. The opening of our great exposition, which occurred on the 17th, and which for completeness is not surpassed by anything of the kind anywhere else on the Continent, is bringing in an unusually large number of visitors, resulting in quite a satisfactory increase of business in the house. The indications all point to a very satisfactory fall business. A decline of  $\frac{1}{2}$  cent per pound on Pure Manila Rope, and a reduc-

tion of 5 cents per keg on Wire Nails, are the only changes in prices that have occurred since our last letter.

#### Omaha.

**LEE-CLARKE-ANDRESEN HARDWARE COMPANY.**—The warm weather of the past two weeks, so much needed to harden up the corn, has caused a great improvement in the general outlook for business all over the States and Territories west of us, and the cause for the fear that the value of the crop would be greatly reduced by the quantity of soft corn has disappeared. Business men are unanimous in the opinion that the conditions were never more favorable for a large and prosperous business during the coming winter. Already the jobbing trade has experienced an enlarged volume of business. Consumers from now on are certain to buy more freely, and retail dealers are preparing to meet the demands of their customers. Collections are gradually improving as the money received from marketed products becomes available. All reports agree that the country west of here is just entering upon a season of unparalleled prosperity.

#### New Orleans.

**A. BALDWIN & Co.**—The general situation in the Hardware line shows a slight improvement, but not in any particular line. Orders are coming in freely, especially for Shelf Hardware. The month of September is more or less quiet in this section, as all of the farmers are watching their crops and are not paying much attention to replenishing their stocks of merchandise. Reports from several sections show somewhat of a discouraging aspect in regard to the volume of the coming crops, which, of course, affects the jobbing trade in some small extent. Collections are freer, especially from the great State of Texas. The Mexican trade has fallen off somewhat, which is caused by the fact of the constant changes in the tariff. Those that have orders placed from that section of the country are anxious to receive their goods before the new tariff goes into effect on November 1. From the general outlook we anticipate an increase in the volume of trade in proportion to last year.

#### Philadelphia.

**SUPPLEE HARDWARE COMPANY**—There has been an increase in the volume of business during the last two weeks, but it is quite evident that the unprecedented crops, with which this country is now being favored, have not turned the heads of either purchaser or merchant. The merchant, in making his purchases, is using careful and deliberate judgment on the safe side. No speculative orders are being placed, even for season goods. Indeed it is a question whether the country merchant is at present not over conservative in his purchases; more so than will be profitable with all the facts before him. The unusual weather has naturally retarded the distribution of goods, and, while wonderfully favorable for the crops, adding millions to the wealth of the farmer, the benefits to the trade have not yet been felt.

The weather has enabled the farmer to remain at home and continue his work, not only harvesting, but to begin fall plowing and other necessary duties usually scattered through the fall; consequently he has neither time, disposition nor necessity for going into the adjacent towns or cities to make purchases; consequently his desires are not yet either known or anticipated by the merchant who, in the conservative way that trade is being done of later years, goes on in his quiet way. Notwithstanding this, trade can be summed up as being good and in a healthy condition.

Prices continue low, although, in our opinion, a scarcity, in many lines, will exist before the season is over, and prices on those goods must naturally rule higher. This opinion is based upon the goods where a scarcity exists at present in both the hands of the manufacturer and jobber, and a few weeks of more than ordinary or active trade will produce a scarcity, and, while manufacturers are willing to dispose of certain lines of goods at cost, rather than curtail the production in any department, they are not willing to sell at cost or less than cost with an active demand and trade. The wonderful crops will naturally be a factor toward a more liberal distribution of goods, which must cause the above results. It is not a very difficult matter for a heavy buyer to separate those lines of goods that are made without profit to the manufacturer, providing he has not only watched the market carefully for the last few years, but has familiarized himself with about the cost of the raw material and the expense attending the manipulation of the same. Experience has enabled the buyers of the larger houses in the country to get pretty near the cost of production on leading goods; surprisingly so to the manufacturers at times. It is to be hoped that the country merchant has been as cool and collected and has kept aloof from the speculative fever that has been raging in both stocks and grain within the last two or three weeks. Circulars are frequently distributed, and tempting financial articles written, showing advances in stocks, but the experience within the last two years, which so nearly caused financial disturbance, should be a warning to the interior merchant, and inflated speculation in stocks should be left to those who can afford to run the risk, without interference with their business. Collections from the interior should be better than they really are. In this particular, there will naturally be a very early improvement.

#### Boston.

**BIGELOW & DOWSE.**—There is nothing of special interest to note. Trade is gradually increasing in volume and prices are well maintained. Exceedingly warm weather for the last two weeks has rather retarded trade with the retailers and many are complaining of dull times. There is a rumor that all the larger Wire Nail manufacturers are about forming a combination for selling their production through one source. This, if carried into effect, will naturally increase the prices of

Nails at once. Barbed Wire is moving freely for the season, and the trade may be stimulated by an anticipated advance October 1. The outlook is for a steady market and good trade this fall, with no general boom before early in 1892.

### Notes on Prices.

**Barb Wire.**—The announcement of the action of the Columbia Patent Company, given in the following despatch from Chicago, will be received by the trade with much interest from the importance of the action and the fact that it has not been anticipated. The reduced prices thus announced go into effect October 1.

*Chicago, by Telegraph.*—The action of the Columbia Patent Company just taken will create something of a sensation in the trade. We have received the following official announcement: The Columbia Patent Company have now passed the second month since they commenced handling the Barbed Wire products of their licensees, and their business is now completely organized. The management find that through centralizing the sale of Barbed Wire, so that one office does the entire business, the company are placed in position to very materially reduce the expenses of handling the product they control, and they have decided to reduce the selling prices as well as to modify the terms of payment. The prices mentioned below take effect on October 1, and the trade will no doubt appreciate efforts of the management to furnish Barb Wire at the lowest possible price and still leave profit sufficient to cover reasonable returns on the capital invested. The agencies heretofore appointed continue to represent the interests of the company at the various large cities, and mail order business in less than carloads will be handled promptly through these agencies. The traveling representatives will hereafter work entirely under the control of the main office, and they will send all orders to Chicago.

The following are the revised prices for immediate shipment only, a reduction of 10 cents per 100 pounds being made on carload lots; terms, 60 days or 3 per cent. discount for cash in 10 days:

	Painted.	Galvanized.
Pittsburgh and Cleveland.....	\$2.55	\$3.05
Allentown, Cincinnati and Joliet,		
Joliet or Chicago, at Co.'s option.	2.65	3.15
St. Louis .....	2.70	3.20
Keokuk.....	2.75	3.25
Lockport, Baker Perfect .....	2.85	3.35
Lawrence and Omaha ..	2.90	3.40
San Francisco.....	3.80	4.30

The above prices and terms are subject to change without notice.

**Wire Nails.**—The manufacturers have no cause for complaint as to the volume of business, but find prices unremunerative. The present condition of things and lack of the prospect of an early improvement have led manufacturers to confer with a view to discovering whether or not some arrangement for the control of the market in one shape or another is feasible. Nothing definite, however, has been accomplished in this direction, and while emphasizing the necessity for some such action they frankly acknowledge the diffi-



culties which stand in the way. During the past week there has been no change in the situation, the demand continuing good and prices remaining as before. Quotations are still on the basis of \$1.85 to \$1.90 for round lots at mill. Somewhat higher figures are named for smaller parcels. Retail lots from store are quoted at \$2.10 to \$2.15, concessions being made where necessary.

*Chicago, by Telegraph.*—Manufacturers report an immense business in progress, but at continued low prices. The rates made here lately by some of the leading concerns are lower than anything ever before known, and it is difficult to see how the sellers can figure out a profit. Their competitors claim that these sales have been made below cost. Better prices are now asked, but it will be difficult to advance prices until outside influences help, such as an advance on raw material. Factory lots are quoted at about \$1.95, Chicago Small lots from stock are quoted at \$2.10.

**Cut Nails.**—The market is not characterized by any increased strength, and prices are regarded as weak, although there has been no quotable change. Slight concessions are, however, made somewhat more freely than a few weeks ago. While the mills are fairly occupied with orders the demand is scarcely as active as it has been. Quotations in the Eastern market remain \$1.50 to \$1.55 for Iron and Steel Nails in carload lots at mill, with 25 or 30 cent average. Quotations in the West are \$1.55 to \$1.60.

*Chicago, by Telegraph.*—Cut Steel Nails are more active, and the manufacturers controlling the Northwestern trade are doing a heavy business. The great bulk of the Cut Steel Nails now sold here comes from Indiana makers, as their prices are considerably below these named by Wheeling and Ohio manufacturers. Quotations range from \$1.65 to \$1.70 on 30-cent average, while jobbers' prices on small lots are unchanged at \$1.75 to \$1.80.

**Glass.**—At a meeting of Glass manufacturers held last week at Columbus, Ohio, the price of American Window Glass in car lots was made 80 and 10 and 5 per cent. discount; less than car lots, 80 and 5 per cent. For the past months the price on car lots has been 80 and 10 per cent. It is understood that the reduction in price was brought about by the action of the Ohio and Indiana manufacturers, the manufacturers of the Pittsburgh district being opposed to the reduction. It is reported that 200 pots, which is equivalent to 20 ten-pot factories, will make no Glass during the remainder of this year, and that there is a shortage of 100,000 boxes of Glass in stock as compared with the amount of Glass in stock at this time last year. It is estimated, however, that the demand is 100,000 boxes less than it was last year. The reason given for the factories referred to not making any Glass for the present is that necessary changes being made to use artificial gas or other fuel in place of natural gas will cause the suspension of operations. In the face of

the reduction in price of American Glass the price of Imported Glass for the month of October will be 75 and 10 per cent. discount, with no additional discount for quantity. The price for September was 75 and 10 and 5 per cent. discount, with an additional 5 per cent. for 50 boxes ordered and taken during the calendar month. Imported Glass is reported as being scarce, with the probability of small arrivals and a stiffening tendency in the market. Printed quotations are as follows: American Window Glass, in carloads, 80 and 10 and 5 per cent. discount; less than car lots, 80 and 5 per cent. discount; French Window Glass, 75 and 10 per cent. discount; American Plate is held at a discount of 50, 10 and 5 per cent., and Imported Plate at a discount of 60 per cent.

#### Warner's Burglar-Proof Rim Lock.

—The following are the list prices of Warner's Burglar-Proof, Rim Lock as manufactured by the Warner Lock Company, 411 and 412 Manhattan Building, Chicago, the list being subject to a discount of 50 and 10 per cent., with an additional 2 per cent. for cash:

	Dozen.
Antique Iron.....	\$9.00
Nickel Plate.....	9.00
Japanned.....	8.00

The advertisement of this Lock will be found in another part of this issue, while the leading features of its construction, &c., are shown in the department of Hardware Novelties.

**Pumps, &c.**—The following discount sheet has recently been issued by the Big-nall Mfg. Company, Medina, N. Y. It indicates the line of goods they are putting on the market and the prices at which they are quoted:

	Discount.
Pitcher Spout Pumps.....	75&10
Cistern Pumps.....	70
Well Pumps.....	60
" Pump Standards.....	60
" Force Pumps.....	60
Engine Well Force Pumps and Standards.....	60
Wind-Mill Pumps.....	60
Threeway Wind-Mill Pumps.....	60
Wind-Mill Pumps on Planks.....	60
Iron and Brass Cylinders.....	60
Check Valves and Strainers.....	50
Iron and Brass House Force Pumps.....	50
Rotary Pumps.....	40
Pump Repairs.....	50
Plumbers' Square Sinks, low list.....	65
" " " " high list.....	75&5
Corner, Half Circle, Extension and Slop Sinks.....	65
Sink Brackets and Sink Legs.....	65
Revolving Clothes Irons.....	65
Cesspools, Urinals and Sewer Traps.....	65
Cast-Iron Soil Pipe.....	65&5
" " " " Fittings.....	70
Skeins and Boxes.....	60
Cast-Iron Bolster Plates.....	60

**Lockwood's Leather-Back Curry Comb.**—This article, manufactured by W. J. Lockwood, for whom John H. Graham & Co., 113 Chambers street, New York, are agents, is intended to retail at 50 cents. The price to the trade is \$4 per dozen.

**Goodell's Shoe File.**—This article, a description of which was given in our last issue, is manufactured and sold by H. H. Mayhew Company, Shelburne Falls, Mass., at \$3 per dozen, subject to a discount of 33½ per cent. An application for a patent on this article has been made.

**Cordage.**—The Rope market is characterized by a good tone and prices are firm. The National Cordage Company are apparently gradually compelling outside manufacturers to enter the combination, with a fair probability that the company will be in full control of the market before long. On this account prices, without being higher, are decidedly firmer, as it is thought by some well-informed parties that an advance may take place before very long. The demand at present is moderate, but some buyers are placing their orders in anticipation of higher prices. The manufacturers are declining to take orders or make contracts for future delivery at present prices, requiring the privilege of immediate or early shipment. Manufacturers' prices in large lots, f.o.b. factory, are as follows; terms, 60 days, 1½ per cent. discount for cash in 10 days:

	Per pound.
Manila, ½ inch and larger.....	8½¢
Manila, ¾ inch.....	9½¢
Manila, 1 and 5-16 inch.....	9½¢
Manila, Tarred Rope.....	8½¢
Manila, Hay Rope.....	8½¢
Sisal, ½ inch and larger.....	5½¢
Sisal, ¾ inch.....	6
Sisal, 1 and 5-16 inch.....	6½¢
Sisal, Hay Rope.....	5½¢
Sisal, Tarred Rope.....	5
Sisal, Medium Lathe Yarn.....	4½¢
New Zealand, ½ inch and larger.....	5
New Zealand, ¾ inch.....	5½¢
New Zealand, 1 and 5-16 inch.....	6
New Zealand, Hay Rope.....	5
New Zealand, Tarred Rope.....	4½¢

**Carriage Bolts.**—At a meeting of the manufacturers last week no change was made in prices. The reports of the manufacturers indicated a business satisfactory in volume and with but little complaint in regard to irregularity in prices.

**Hollow Ware.**—The market in ground and unground Stove Hollow Ware remains without change, the prices of the association being regularly maintained, with a good business. The recent efforts made by some of the manufacturers of Maslin Kettles and Sauce Pans to advance their prices were not attended with much success, as substantially the same prices are now being quoted as have ruled in this line for the past few months.

#### Trade Items.

**HORTON, GILMORE, McWILLIAMS & CO.** of Chicago are putting on the market a new Table Set which they term their Youth's Set. It consists of an ivory-handled Knife, a four-pronged Fork, a Spoon and a Napkin Ring, all finely finished and triple plated. This set has been designed to meet the views of those who are looking for a better class of goods than are usually sold under the name of children's sets. They are larger and yet small enough to be distinctive in appearance.

OUR READERS will scarcely fail to observe the two-page advertisement of the Nicholson File Company, Providence, R. I., in which they give views of their works in that city and at Pawtucket, and also devote a page to the illustration of their Files, calling special attention to their Xtra (X.F.) Fine Files, some patterns of which are illustrated.

THE OLD-ESTABLISHED wholesale Hardware firm of F. S. Bradley & Co., New Haven, Conn., who have carried on a large and successful business for the past 30 years, will retire October 1. W. W. Buckingham, W. S. Clark and A. H.

Jackson, all of whom have been in the employ of the old firm for a number of years, will continue the business under the firm name of Buckingham, Clark & Jackson.

AMONG THE SPECIAL NOTICES in this issue is one over the *nom de plume* "Vestibule," which is deserving the attention of any of our readers who may be in a position to avail themselves of such an opportunity. The advertisers, who are doing a large and successful business in a Western city, are desirous of securing as manager of their store a Hardwareman of experience and with some capital, with whom an advantageous arrangement would be made. The character of the house and its increasing business make this opening an exceptionally favorable one.

THE BELDEN MACHINE COMPANY, New Haven, Conn., have in connection with their other goods commenced the manufacture of the Collins Improved Automatic Wire Straightener and Cutter, with all the attachments necessary to take the Wire from the bundle and straighten and cut it to any length desired. The company allude to the merit of this machine and the reasonable price at which it is offered.

IN THEIR PAGE ADVERTISEMENT in this issue Gilbert & Bennett Mfg. Company, Georgetown, Conn., New York and Chicago, illustrate a few examples of the large and important line of Wire Goods which they are putting on the market, including Galvanized Wire Cloth, Woven-Wire Fencing, patent Sand Screen, &c.

C. D. LINCOLN and E. W. Fenn have recently opened offices and salesrooms at 160 Congress street, Boston, where they carry complete lines of samples of Cutlery of every description, embracing the products of eight concerns, whose goods are non-conflicting. The firms represented include Northampton Cutlery Company, Empire Knife Company and John C. Witte & Bro.

IDEAL MFG. COMPANY, New Haven, Conn., are putting on the market the Ideal Loading Flask. The Flask holds  $\frac{1}{4}$  pound of Powder and measures in any required number of grains from 3 to 135. It is also graduated in drams from  $\frac{1}{4}$  to 5.

WILCOX & HOWE COMPANY, Birmingham, Conn., in their advertisement occupying a page elsewhere in this issue, illustrate a few of their patterns in the Carriage Hardware line, and state that their new catalogue now in the press will be mailed free on application.

HIS BUSINESS having outgrown the facilities of his old quarters at 59 Elm street, New York, Joseph Bardsley, manufacturer of patent Checking Spring Hinges, Wood Door Knobs, &c., has removed to 147, 149 and 151 Baxter street, where with considerably larger accommodations he will be able to fill all orders promptly.

THE TRADE will be interested in the somewhat unique advertisement of the Taintor Mfg. Company, occupying a colored leaf in this issue. It will be observed that on one side a description of the Taintor Saw Set is given, attention being briefly directed to some of the special features of its construction and resulting advantages, with a number of testimonials in regard to its merit. The other side of the leaf will be read by Hardwaremen with some interest, representing as it does the manner in which the goods are put on the market, each set being placed in a separate wooden box, and a half dozen in a larger box. The company are evidently endeavoring to facilitate the sale of these goods by retailers, and in doing this have adopted a device which will be regarded with interest. A card for hanging in the store is furnished, with

the words "Ask for a Saw to try the Taintor Saw Set," and in connection with each lot of Saw Sets a few Saws are furnished on which the operation of the Set may be shown, thus attracting the attention of customers and facilitating sales. The attention thus given to putting the Sets on the market in good shape will be appreciated by the trade, as well as the efforts made by the company to aid dealers in introducing the goods.

THE TRADE will observe the advertisement of the Trimont Mfg. Company, Roxbury, Mass., calling attention to their Trimo Pipe Wrench and Trimo Chain Pipe Wrench. These Wrenches are referred to as being made of the best material, strong, durable and easy of operation. It is claimed that they will not crush the pipe; release their hold readily, and combine all the desirable points requisite to tools of this kind.

OUR LATEST ADVICES from Polhemus Lyon, our special representative in export markets, are from Cape Town, South Africa, under date September 2. The mail arrived at this office 28th making unusually fast time, going to Southampton by the new twin-screw steamer Scot, and thence to New York, a trip of over 9000 miles, and saving at least a day or two over the usual time between Cape Town and this port.

## Trade Topics.

**Good Packing.**—The discussion as to the defective packing of goods has resulted in calling the attention of the trade to many instances in which manufacturers fail to be as careful as they might be in regard to the manner in which their goods are boxed or wrapped when put on the market, and it appears not unlikely that as the result of this discussion some improvements will be adopted.

We are in receipt from E. C. Stearns & Co., Syracuse, N. Y., of a letter in which they refer to the article in question, as timely, and advise us that they have recently adopted a light slide-cover wooden box for all their shelf goods, and find them much more satisfactory to the trade than the usual paper boxes.

The attention given to this matter by the Taintor Mfg. Company, for whom Wiebusch & Hilger are sole agents, 84 and 86 Chambers street, New York, is deserving the attention of the trade, their method of packing their Sets in separate wooden boxes with other conveniences for retailers, being described in the colored leaf in this issue.

**Cash Discount.**—In reply to the inquiry contained in our last issue in regard to cash discount, we have received the following from a prominent Western manufacturer:

Referring to query entitled "Cash Discount," issue September 24, would say if the consignor had paid the freight there would then be no doubt in the mind of your correspondent whether he was entitled to deduct 2 per cent. from the face of the bill, as the freight would not have been in the consideration.

The seller might have curtailed the amount of the cash discount by quoting a price which would have been the value of the goods, less freight, and let the purchaser pay the freight.

This plan would have reduced the amount of the invoice and therefore the cash discount, the seller realizing the same

price for his goods and saving something on the cash discount.

The cash discount should be deducted from the face of the bill regardless of freight.

**Cash Business.**—From a well-known wholesale Hardware house in Texas, we have an inquiry with reference to whether it has been found feasible in either wholesale or retail trade to do an exclusively cash business. The point in question is an interesting one, and we take pleasure in submitting our correspondent's inquiry to our readers:

GENTLEMEN: I would like to learn whether among your numerous readers there is a Hardware firm or firms who do an exclusively cash business, either wholesale or retail, or both. My inquiry has no reference to buying, as most any one can buy for cash without the least difficulty. What I want to find out is whether any Hardware store has been in successful operation for any length of time in the United States without selling goods on time. Any information on this subject will be highly appreciated by me and perhaps many other readers.

Referring to the desirability of doing a cash business and the inconvenience and loss that result from a credit business as frequently carried on, we have the following from a correspondent in Ohio:

Having noticed in your last issue an invitation to give experience in regard to business done on a cash basis, I gladly respond as a retail dealer in Hardware, Stoves and Tinware, having had 16 years' practice in the above-named branches. During that time I have watched very carefully that part of the business which bears close inspection—namely, the cash—from the fact that cash is a very necessary article in business.

There are several reasons why a cash system should be preferred to any other. A man who buys and sells for cash is one who gets a full amount of sleep and feels rested in the morning, because he owes no one and no one owes him. Again, he is saved the trouble of pondering over his books after others have closed up their stores and wondering who he had best tackle next morning for money so as to be able to meet the draft which has already arrived in the city and will be presented by the banker on the following day. So it is easy to realize that the man who does a cash business is relieved from all this anxiety and he has more time to do his work and see to his business. Again, a man who does a cash business has few enemies and never offends any one asking them for money that should have been paid when they sold their wool or hay or wheat, and, besides, you have the money to pay for what you buy; therefore you can buy cheaper and you will not be apt to buy what you do not need, because you expect to pay for it when it arrives. The cash business means a great deal. It means you must pay cash for all you buy and ask the cash for all you sell, and when night comes you know just how you stand and you know in what position your customers stand in relation to you. They are not ashamed to come into your store and look you in the face, because they do not owe you anything. On the other hand, if you do a credit business you would not know just how you stood nor where your customers were to be found, because you would seldom see them. They owe you money and are careful that you do not get a chance to see them. If you do a cash business one year you will find it becomes an easy matter to continue it. After people are convinced that you mean to do a cash business they will come prepared and eventually like the system.



Price-Lists, Circulars, &c.

**SUPPLEE HARDWARE COMPANY,** Philadelphia, Pa.: Lamps and Fixtures. The above firm issue a catalogue of about 50 large pages devoted to these goods exclusively. It contains illustrations of Piano, Banquet, Table, Hanging and Hand Lamps in great variety; besides Globes, Reflectors and other Lamp Fixtures. It includes price-lists and is designed for the season of 1891-92. The catalogue covers a large and interesting line of the goods to which it relates, which are coming to be much more important in the Hardware trade than formerly.

**PRENTISS VISE COMPANY,** 44 Barclay street, New York: Vises. Illustrations are given of self-adjusting Jaw Vises,

Plows, Potato Planters, Harrows, Cultivators, Barrows, Trucks, Fan Mills, &c. These goods are referred to as being made of the best material, and as being constructed in a manner to insure the greatest stability.

**GEUDER & PAESCHKE MFG. COMPANY,** Milwaukee, Wis.: Catalogue and price-list. The volume contains 250 pages 6 x 9 1/2 inches. The manufacturers state that in issuing it they deviate from the custom established by some manufacturers in their line, and have printed the regular trade lists in the proper place instead of issuing the lists separately. The line of goods embraced in the volume will be best understood from the following department index: Pieced Tinware, Copper Ware, Black and Galvanized Sheet-Iron Ware, Stamped Ware, Tinners' Trim-

Some Old Invoices.

PART II.

**ALL WHO ARE FAMILIAR** with the firm name of Sidney Shepard & Co. Buffalo, N. Y., will be interested in seeing a bill head used in 1841, Fig. 6, and particularly in the stove represented there, which is supposed to have been one of the most approved styles of the day. It is easy to imagine the screws contained in Davenport & Quincy's invoice, Fig. 7, as having blunt points put up in paper packages tied with string. Among other goods enumerated on their bill head, it will



*Wm. W. Bingham & Co.* Buffalo, *August 25 1841*

*Bought of* **SIDNEY SHEPARD.**

Dealer in  
**STOVES.**

Stove Furniture, Hollow-Ware, Russia, English and Philadelphia Sheet-Iron, Lead, Zinc,  
Bar Iron, Steel, Nails, Copper, Tin, Wire, &c, &c.

AND MANUFACTURER OF  
LEAD PIPE, SHEET-IRON, COPPER AND TIN WARES, &c.

66 Main Street.

2 Boxes 1/2 in Lead Pipe	288		
2 " 1/4 " "	217 1/2		
1 " 3/4 " "	304		
1 " 1/2 " "	242		
	190 1/2		
	192 1/2		
	143 4 1/2	7 1/2	100.42
print Box 3/8 (in box with pipe)	10 1/2	8	8.48
6 Boxes 1/4 Cast-iron	31	3.37	112.27
Or			
By 20 Pipe Lead	14 51	5 1/2	72.55
			72.55
			✓ 39.72

Fig. 6.

Jewelers', Rapid Transit, Heavy Chipping, Bull Dog, Farmers and Solid Box Vises. They also manufacture Vise attachments and duplicate parts. Attention is called to the use of numbers in this catalogue, by which both the sizes and kinds of their Vises will be hereafter designated.

**THE SAMUEL C. TATUM COMPANY,** Cincinnati, Ohio: Catalogue Files, Letter Boxes, Cabinet Scrapers, Dumb Bells and Quoits, Spring Letter Plates, Combination Trucks, Samson Truck Casters, Copying Presses and Stationers' Hardware.

**E. C. MEACHAM ARMS COMPANY,** St. Louis, Mo.: Price current No. 462. This is devoted to Guns, Revolvers, Ammunition, &c., with a key to quotations for dealers.

**THE BELCHER & TAYLOR AGRICULTURAL TOOL COMPANY,** Chicopee Falls, Mass.: Hay, Straw and Ensilage Cutters, Vegetable Cutters, Corn Shellers,

gings, Mica, Japanned Toilet Ware, Blue and White Enameled Ware, Granite Ware, Perfection Ware, Spoons, Stove Boards, Vapor Stoves, Tin Sieves, Miscellaneous and Bird Cages. Every page contains several illustrations in addition to the tables of prices and sizes. A very pleasing feature of the book is the illustrations that introduce every section. Besides the department index there is a full alphabetical index of the contents. It would not be proper to close a notice of this handsome volume without directing attention to the very tasteful cover. The sides are thick boards and are covered half with dark colored cloth, the back and other half of the sides being covered with tinted paper of a different color, with excellent effect.

**NUBIAN IRON ENAMEL COMPANY,** Chicago, Ill., issue a calendar for the three last months of 1891. Each date is given a separate leaf, with reference to their goods on each.

be seen that they carried a full assortment of American Hardware. Edwin Hunt, whose sons are now doing business in Chicago under the firm name of Edwin Hunt's Sons, solicits dealers in Hardware to examine his stock and prices at his store, 77 John street, New York. We reproduce some quotations in Fig. 8, as sent to W. Bingham & Co. The price-list of Finishing Nails, Hook Head Brads, Tacks and Shoe Nails, as sent out by the Pittsburgh Tack Factory in 1845, Fig. 9, is quite a different affair in size from a list of this class of goods to-day. It will be noticed also that Tacks were, then made in full, two-thirds and one-half weights. Accompanying an invoice of Saddlery Hardware from P. Hay-

den & Co., Fig. 10, is the following note, stating how these goods were shipped:

Gentlemen.—Above you have bill of trus. sent you this day by canal boat Red Bird, which will arrive in due time.

Respy yours, P. HAYDEN & Co.,  
Per S. D. ABBOTT.

N. EASTON, Dec. 2d, 1843.

MESSRS. W. BINGHAM & Co.:

Gents—Your favor of the 24th Nov came to hand this evening, asking at what price we would furnish you 100 doz N 2 B Strap Shovels Dld in N. York next April.

article that will be satisfactory. The Carr's Iron Shovel at 5.70 is made from rolled Iron and the plates are smooth & perfect.

You are entire strangers to me, but suppose you can give satisfactory reference. If you order we should like to have you order as early as you can send it so that

New-York, 2 August 1841  
Messrs W. Bingham & Co.

**IRON WIRE,**  
ROUND & SQUARE IRON,  
**WIRE RODS,**  
**SUPERIOR WOOD SCREWS.**

Bought of

**DAVENPORT & QUINCY**  
**HARDWARE COMMISSION MERCHANTS**  
No. 21 PLATT STREET, New-York,  
Who have For Sale Genuine Wilson's Coffee Mills, Hunt's Edge Tools, Worrall's Celebrated CS. SA  
Trowels, Try Squares, &c.—Britannia Ware, Brass, Nails, Andirons, Tacks, Brads, &c.  
Together with a full assortment of AMERICAN HARDWARE.

*Wings Wood Screws*

✓ 1/2 in 6-10 <sup>21</sup> 2s	2.10
✓ 7/8. 7-10 <sup>26</sup> 8-20 <sup>29</sup> + 9-10 <sup>31</sup> 2s	11.50
✓ 3/4. 9 <sup>32</sup> + 10-10 <sup>34</sup> 2s Ev.	6.60
✓ 7/8. 8-10 <sup>31</sup> 2s.	3.10
✓ 1. 8-20 <sup>33</sup> + 9-20 <sup>35</sup> + 10-20 <sup>37</sup> + 12-10 <sup>43</sup> 2s	28.80
✓ 1 1/4. 9-10 <sup>40</sup> + 10-30 <sup>43</sup> + 11-20 <sup>46</sup> + 12-5 <sup>51</sup> 2s	28.60
✓ 1 1/2. 10-40 <sup>47</sup> + 11-20 <sup>51</sup>	14.90
✓ 1 3/4. 11-57 <sup>57</sup> 12-63 <sup>63</sup> 13-70 <sup>70</sup> 5 1/2 2s.	9.50
✓ 2. 14-88 <sup>88</sup> 5 1/2 2s	4.40
	109.50
	off 30% 32.85
	76.65

Fig. 7.

Edwin Hunt, 77 John St (between William & Gold Sts) N.Y. solicits Dealers in Hardware to examine his Stocks & Prices, prior to making their purchases.  
Prices of a few articles are annexed.

Anvils—Wilkinson's 8¢ Foster's 9¢  
Axes—Collins' 13<sup>13</sup> Harris' 11<sup>11</sup>  
Bolts round iron 3.28¢ 4.38¢ 5.48¢ Extra Strong of Towner 4.51¢ 5.61¢ 7.76¢ 8.86¢  
Braces & Bits, plated solid h. Braces 2.4 30 36 38 40 42 44 46 48 50 52 54 56 58 60 62 64 66 68 70 72 74 76 78 80 82 84 86 88 90 92 94 96 98 100 102 104 106 108 110 112 114 116 118 120 122 124 126 128 130 132 134 136 138 140 142 144 146 148 150 152 154 156 158 160 162 164 166 168 170 172 174 176 178 180 182 184 186 188 190 192 194 196 198 200  
Barbours Cooper's Tools @ 25¢ to dis. from his list.—if in sufficient quantities they are forwarded direct from the Manufactory at Rochester  
Candlesticks, Strong Sheet Brass 5.55 5.57 6.41 6.43 6.45 6.47 6.49 6.51 6.53 6.55 6.57 6.59 6.61 6.63 6.65 6.67 6.69 6.71 6.73 6.75 6.77 6.79 6.81 6.83 6.85 6.87 6.89 6.91 6.93 6.95 6.97 6.99 7.01 7.03 7.05 7.07 7.09 7.11 7.13 7.15 7.17 7.19 7.21 7.23 7.25 7.27 7.29 7.31 7.33 7.35 7.37 7.39 7.41 7.43 7.45 7.47 7.49 7.51 7.53 7.55 7.57 7.59 7.61 7.63 7.65 7.67 7.69 7.71 7.73 7.75 7.77 7.79 7.81 7.83 7.85 7.87 7.89 7.91 7.93 7.95 7.97 7.99 8.01 8.03 8.05 8.07 8.09 8.11 8.13 8.15 8.17 8.19 8.21 8.23 8.25 8.27 8.29 8.31 8.33 8.35 8.37 8.39 8.41 8.43 8.45 8.47 8.49 8.51 8.53 8.55 8.57 8.59 8.61 8.63 8.65 8.67 8.69 8.71 8.73 8.75 8.77 8.79 8.81 8.83 8.85 8.87 8.89 8.91 8.93 8.95 8.97 8.99 9.01 9.03 9.05 9.07 9.09 9.11 9.13 9.15 9.17 9.19 9.21 9.23 9.25 9.27 9.29 9.31 9.33 9.35 9.37 9.39 9.41 9.43 9.45 9.47 9.49 9.51 9.53 9.55 9.57 9.59 9.61 9.63 9.65 9.67 9.69 9.71 9.73 9.75 9.77 9.79 9.81 9.83 9.85 9.87 9.89 9.91 9.93 9.95 9.97 9.99 10.01 10.03 10.05 10.07 10.09 10.11 10.13 10.15 10.17 10.19 10.21 10.23 10.25 10.27 10.29 10.31 10.33 10.35 10.37 10.39 10.41 10.43 10.45 10.47 10.49 10.51 10.53 10.55 10.57 10.59 10.61 10.63 10.65 10.67 10.69 10.71 10.73 10.75 10.77 10.79 10.81 10.83 10.85 10.87 10.89 10.91 10.93 10.95 10.97 10.99 11.01 11.03 11.05 11.07 11.09 11.11 11.13 11.15 11.17 11.19 11.21 11.23 11.25 11.27 11.29 11.31 11.33 11.35 11.37 11.39 11.41 11.43 11.45 11.47 11.49 11.51 11.53 11.55 11.57 11.59 11.61 11.63 11.65 11.67 11.69 11.71 11.73 11.75 11.77 11.79 11.81 11.83 11.85 11.87 11.89 11.91 11.93 11.95 11.97 11.99 12.01 12.03 12.05 12.07 12.09 12.11 12.13 12.15 12.17 12.19 12.21 12.23 12.25 12.27 12.29 12.31 12.33 12.35 12.37 12.39 12.41 12.43 12.45 12.47 12.49 12.51 12.53 12.55 12.57 12.59 12.61 12.63 12.65 12.67 12.69 12.71 12.73 12.75 12.77 12.79 12.81 12.83 12.85 12.87 12.89 12.91 12.93 12.95 12.97 12.99 13.01 13.03 13.05 13.07 13.09 13.11 13.13 13.15 13.17 13.19 13.21 13.23 13.25 13.27 13.29 13.31 13.33 13.35 13.37 13.39 13.41 13.43 13.45 13.47 13.49 13.51 13.53 13.55 13.57 13.59 13.61 13.63 13.65 13.67 13.69 13.71 13.73 13.75 13.77 13.79 13.81 13.83 13.85 13.87 13.89 13.91 13.93 13.95 13.97 13.99 14.01 14.03 14.05 14.07 14.09 14.11 14.13 14.15 14.17 14.19 14.21 14.23 14.25 14.27 14.29 14.31 14.33 14.35 14.37 14.39 14.41 14.43 14.45 14.47 14.49 14.51 14.53 14.55 14.57 14.59 14.61 14.63 14.65 14.67 14.69 14.71 14.73 14.75 14.77 14.79 14.81 14.83 14.85 14.87 14.89 14.91 14.93 14.95 14.97 14.99 15.01 15.03 15.05 15.07 15.09 15.11 15.13 15.15 15.17 15.19 15.21 15.23 15.25 15.27 15.29 15.31 15.33 15.35 15.37 15.39 15.41 15.43 15.45 15.47 15.49 15.51 15.53 15.55 15.57 15.59 15.61 15.63 15.65 15.67 15.69 15.71 15.73 15.75 15.77 15.79 15.81 15.83 15.85 15.87 15.89 15.91 15.93 15.95 15.97 15.99 16.01 16.03 16.05 16.07 16.09 16.11 16.13 16.15 16.17 16.19 16.21 16.23 16.25 16.27 16.29 16.31 16.33 16.35 16.37 16.39 16.41 16.43 16.45 16.47 16.49 16.51 16.53 16.55 16.57 16.59 16.61 16.63 16.65 16.67 16.69 16.71 16.73 16.75 16.77 16.79 16.81 16.83 16.85 16.87 16.89 16.91 16.93 16.95 16.97 16.99 17.01 17.03 17.05 17.07 17.09 17.11 17.13 17.15 17.17 17.19 17.21 17.23 17.25 17.27 17.29 17.31 17.33 17.35 17.37 17.39 17.41 17.43 17.45 17.47 17.49 17.51 17.53 17.55 17.57 17.59 17.61 17.63 17.65 17.67 17.69 17.71 17.73 17.75 17.77 17.79 17.81 17.83 17.85 17.87 17.89 17.91 17.93 17.95 17.97 17.99 18.01 18.03 18.05 18.07 18.09 18.11 18.13 18.15 18.17 18.19 18.21 18.23 18.25 18.27 18.29 18.31 18.33 18.35 18.37 18.39 18.41 18.43 18.45 18.47 18.49 18.51 18.53 18.55 18.57 18.59 18.61 18.63 18.65 18.67 18.69 18.71 18.73 18.75 18.77 18.79 18.81 18.83 18.85 18.87 18.89 18.91 18.93 18.95 18.97 18.99 19.01 19.03 19.05 19.07 19.09 19.11 19.13 19.15 19.17 19.19 19.21 19.23 19.25 19.27 19.29 19.31 19.33 19.35 19.37 19.39 19.41 19.43 19.45 19.47 19.49 19.51 19.53 19.55 19.57 19.59 19.61 19.63 19.65 19.67 19.69 19.71 19.73 19.75 19.77 19.79 19.81 19.83 19.85 19.87 19.89 19.91 19.93 19.95 19.97 19.99 20.01 20.03 20.05 20.07 20.09 20.11 20.13 20.15 20.17 20.19 20.21 20.23 20.25 20.27 20.29 20.31 20.33 20.35 20.37 20.39 20.41 20.43 20.45 20.47 20.49 20.51 20.53 20.55 20.57 20.59 20.61 20.63 20.65 20.67 20.69 20.71 20.73 20.75 20.77 20.79 20.81 20.83 20.85 20.87 20.89 20.91 20.93 20.95 20.97 20.99 21.01 21.03 21.05 21.07 21.09 21.11 21.13 21.15 21.17 21.19 21.21 21.23 21.25 21.27 21.29 21.31 21.33 21.35 21.37 21.39 21.41 21.43 21.45 21.47 21.49 21.51 21.53 21.55 21.57 21.59 21.61 21.63 21.65 21.67 21.69 21.71 21.73 21.75 21.77 21.79 21.81 21.83 21.85 21.87 21.89 21.91 21.93 21.95 21.97 21.99 22.01 22.03 22.05 22.07 22.09 22.11 22.13 22.15 22.17 22.19 22.21 22.23 22.25 22.27 22.29 22.31 22.33 22.35 22.37 22.39 22.41 22.43 22.45 22.47 22.49 22.51 22.53 22.55 22.57 22.59 22.61 22.63 22.65 22.67 22.69 22.71 22.73 22.75 22.77 22.79 22.81 22.83 22.85 22.87 22.89 22.91 22.93 22.95 22.97 22.99 23.01 23.03 23.05 23.07 23.09 23.11 23.13 23.15 23.17 23.19 23.21 23.23 23.25 23.27 23.29 23.31 23.33 23.35 23.37 23.39 23.41 23.43 23.45 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26.79 26.81 26.83 26.85 26.87 26.89 26.91 26.93 26.95 26.97 26.99 27.01 27.03 27.05 27.07 27.09 27.11 27.13 27.15 27.17 27.19 27.21 27.23 27.25 27.27 27.29 27.31 27.33 27.35 27.37 27.39 27.41 27.43 27.45 27.47 27.49 27.51 27.53 27.55 27.57 27.59 27.61 27.63 27.65 27.67 27.69 27.71 27.73 27.75 27.77 27.79 27.81 27.83 27.85 27.87 27.89 27.91 27.93 27.95 27.97 27.99 28.01 28.03 28.05 28.07 28.09 28.11 28.13 28.15 28.17 28.19 28.21 28.23 28.25 28.27 28.29 28.31 28.33 28.35 28.37 28.39 28.41 28.43 28.45 28.47 28.49 28.51 28.53 28.55 28.57 28.59 28.61 28.63 28.65 28.67 28.69 28.71 28.73 28.75 28.77 28.79 28.81 28.83 28.85 28.87 28.89 28.91 28.93 28.95 28.97 28.99 29.01 29.03 29.05 29.07 29.09 29.11 29.13 29.15 29.17 29.19 29.21 29.23 29.25 29.27 29.29 29.31 29.33 29.35 29.37 29.39 29.41 29.43 29.45 29.47 29.49 29.51 29.53 29.55 29.57 29.59 29.61 29.63 29.65 29.67 29.69 29.71 29.73 29.75 29.77 29.79 29.81 29.83 29.85 29.87 29.89 29.91 29.93 29.95 29.97 29.99 30.01 30.03 30.05 30.07 30.09 30.11 30.13 30.15 30.17 30.19 30.21 30.23 30.25 30.27 30.29 30.31 30.33 30.35 30.37 30.39 30.41 30.43 30.45 30.47 30.49 30.51 30.53 30.55 30.57 30.59 30.61 30.63 30.65 30.67 30.69 30.71 30.73 30.75 30.77 30.79 30.81 30.83 30.85 30.87 30.89 30.91 30.93 30.95 30.97 30.99 31.01 31.03 31.05 31.07 31.09 31.11 31.13 31.15 31.17 31.19 31.21 31.23 31.25 31.27 31.29 31.31 31.33 31.35 31.37 31.39 31.41 31.43 31.45 31.47 31.49 31.51 31.53 31.55 31.57 31.59 31.61 31.63 31.65 31.67 31.69 31.71 31.73 31.75 31.77 31.79 31.81 31.83 31.85 31.87 31.89 31.91 31.93 31.95 31.97 31.99 32.01 32.03 32.05 32.07 32.09 32.11 32.13 32.15 32.17 32.19 32.21 32.23 32.25 32.27 32.29 32.31 32.33 32.35 32.37 32.39 32.41 32.43 32.45 32.47 32.49 32.51 32.53 32.55 32.57 32.59 32.61 32.63 32.65 32.67 32.69 32.71 32.73 32.75 32.77 32.79 32.81 32.83 32.85 32.87 32.89 32.91 32.93 32.95 32.97 32.99 33.01 33.03 33.05 33.07 33.09 33.11 33.13 33.15 33.17 33.19 33.21 33.23 33.25 33.27 33.29 33.31 33.33 33.35 33.37 33.39 33.41 33.43 33.45 33.47 33.49 33.51 33.53 33.55 33.57 33.59 33.61 33.63 33.65 33.67 33.69 33.71 33.73 33.75 33.77 33.79 33.81 33.83 33.85 33.87 33.89 33.91 33.93 33.95 33.97 33.99 34.01 34.03 34.05 34.07 34.09 34.11 34.13 34.15 34.17 34.19 34.21 34.23 34.25 34.27 34.29 34.31 34.33 34.35 34.37 34.39 34.41 34.43 34.45 34.47 34.49 34.51 34.53 34.55 34.57 34.59 34.61 34.63 34.65 34.67 34.69 34.71 34.73 34.75 34.77 34.79 34.81 34.83 34.85 34.87 34.89 34.91 34.93 34.95 34.97 34.99 35.01 35.03 35.05 35.07 35.09 35.11 35.13 35.15 35.17 35.19 35.21 35.23 35.25 35.27 35.29 35.31 35.33 35.35 35.37 35.39 35.41 35.43 35.45 35.47 35.49 35.51 35.53 35.55 35.57 35.59 35.61 35.63 35.65 35.67 35.69 35.71 35.73 35.75 35.77 35.79 35.81 35.83 35.85 35.87 35.89 35.91 35.93 35.95 35.97 35.99 36.01 36.03 36.05 36.07 36.09 36.11 36.13 36.15 36.17 36.19 36.21 36.23 36.25 36.27 36.29 36.31 36.33 36.35 36.37 36.39 36.41 36.43 36.45 36.47 36.49 36.51 36.53 36.55 36.57 36.59 36.61 36.63 36.65 36.67 36.69 36.71 36.73 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40.07 40.09 40.11 40.13 40.15 40.17 40.19 40.21 40.23 40.25 40.27 40.29 40.31 40.33 40.35 40.37 40.39 40.41 40.43 40.45 40.47 40.49 40.51 4



We give below the price-list of Shovels and Spades referred to in the foregoing letter, as showing the line of goods manufactured by Oliver Ames at that time and the prices at which they were sold:

PRICES OF SHOVELS AND SPADES MANUFACTURED BY

OLIVER AMES, North Easton, Mass.

	Per doz.
Ames' Back Strap Shovels, Steel Edge, No. 1 and 2.....	\$10.00
Ames' Back Strap Shovels, Steel Edge, No. 3.....	10.00

Carr's polished Cast Steel	Shovels, No. 2...	10.00
" " " "	No. 3...	10.50
" " " "	Spades, No. 2...	10.50
	Round Point	
Shovels...		10.50
Carr's Iron Back Strap	Shovels, No. 2...	8.70
Adams' Back Strap	Shovels, No. 2...	7.00
" Plain	Shovels, No. 2...	6.00
" D-Handle, Round Point,	Shovels...	6.00
" Long Handle, Round Point,	Shovels...	6.00
" Spades, No. 2...		7.00
Stone's Cast Steel Polished	Shovels, No. 2...	9.00

In answer to an inquiry for quotations is a letter from St. Louis, Mo., dated June 25, 1844, in which clean Lead Pipe, assorted, is quoted at 5½ cents per pound:

Lead, per 100 pounds :			
Pig.....	2.93	@	2.95
Bar.....	3.50	@	4.00
Sheet.....			6.00
Pipe, patent.....			5.00
Steel, per pound :			
English Blister.....			.15
Cast.....			.22
Crowley.....			.12 <sup>1</sup> / <sub>2</sub>
German.....			.15
American Blister.....			.08
Tin, Block :			
Per pound.....	.26	@	.30

The above extracts from a budget of old invoices and other papers which we have been permitted in this and a previous issue to lay before our readers will recall to many old Hardwaremen something of the very different condition of things 50 years ago. They will also indicate to a younger generation some of the changes which have taken place in the business and the great progress which has characterized the half century. The vicissitudes of business are also illustrated, as many of the houses with whom W. Bingham Company had relations at the beginning of their business career have ceased to exist, while others which were comparatively small at that time have grown and strengthened until they are among the leading concerns in the trade, their history thus corresponding to that of the enterprising house by whose courtesy we are permitted to lay these old-time invoices before our readers.

## Portland, Oregon, as a Hardware Market.

**A** RECENT ISSUE of the *Morning Oregonian* contains an interesting article on the wholesale Hardware trade of Portland, in which the resources and local advantages of Portland are compared with those of San Francisco, Seattle, Tacoma and other cities which are striving for supremacy in the trade of the Pacific Slope. The territory which is tributary to Portland is referred to as extending from Montana on the east to the Pacific Ocean on the west, from California on the south to British Columbia and Alaska on the north—a territory over 600 miles square, with over 3500 miles of railroad and with no less than 1000 miles of navigable streams. It is maintained that the position of Portland as a mercantile center has been won by the energy and enterprise of her business houses and in spite of many artificial disadvantages growing out of persistent discrimination against her by the railroad companies. I. H. Amos of Foster & Robertson sets forth these difficulties in an article as follows :

There is no city of its size in the United States where the jobbing Hardware business is handled with more intelligence and with greater energy than it is in the city of Portland, and were it not for the excessive railroad freights on outward shipments in every direction, coupled with discriminating rates in favor of San Francisco and the East, Portland jobbers could easily hold the territory west of the Rocky Mountains and north of the California line against all competitors ; but when Portland is forced to pay on the largest portion of her shipments a freight rate of \$1.74 per 100 pounds to Spokane Falls and adjacent territory, a distance of 450 miles, against a rate from St. Paul of \$3 per 100 pounds, a distance of over 1500 miles, the disadvantages are too great to be entirely overcome, even by the sacrifice of the entire profits. While the hardships suffered by Portland jobbers arising from excessive freight rates maintained by the Union Pacific and Northern Pacific Railroad companies to points east of the mountains are grievous to bear, yet they sink into utter insignificance when compared with what they are compelled to submit to in the valley. The following figures (which for convenience are based on the less than carload rate on Nails), will throw at least a measure of light on the

## PITTSBURGH TACK FACTORY.

**PRICES OF  
FINISHING NAILS, HOOK HEAD BRADS,  
Tacks and Shoe Nails.**

<b>Tacks.</b> —	24 ounces,	.	.	per 1000,	29 Cts.
22	"	.	.	.	27
20	"	.	.	.	25
18	"	.	.	.	23
16	"	.	.	.	21
14	"	.	.	.	19
12	"	.	.	.	18
10	"	.	.	.	17
8	"	.	.	.	16
6	"	.	.	.	15
4	"	.	.	.	14
3	"	.	.	.	13
2	"	.	.	.	12
1½	"	.	.	.	12

**Copper Tacks.** . . . . per lb.

### Hook Head Brads.

	24	inch,	.	.	.	.	.	per 1000,
24	"	.	.	.	.	.	.	
2	"	.	.	.	.	.	.	
14	"	.	.	.	.	.	.	
14	"	.	.	.	.	.	.	
14	"	.	.	.	.	.	.	
1	"	.	.	.	.	.	.	
2	"	.	.	.	.	.	.	
2	"	.	.	.	.	.	.	

### Finishing Nails.

From 1 to 2½ in. assorted, *per lb.*

$\frac{1}{2}$  and  $\frac{3}{4}$  in. per 1000,

**Shoe Nails, assorted,**

COPIES do. do. . . . .

### Points for Pattern Makers.

Assorted, . . . per 1000,

WAREHOUSE, 54 Opposite Exchange Bank

WOODWARD, HERSEY & Co.

PITTSBURGH, PA. *July 1* 1845

J. McMILLIN, Pa. Third street, Pittsburgh.

<b>Ames' Plain Shovels, Steel Edge, No. 1 and</b>	<b>9.50</b>
<b>2.....</b>	<b>10.00</b>
<b>Ames' Plain Shovels, Steel Edge, No. 3.....</b>	<b>11.00</b>
" " " " " " " " " " " "	No. 4.....
" " " " " " " " " " " "	No. 5.....
" " " " " " " " " " " "	No. 6.....
" " " " " " " " " " " "	No. 7.....
" " " " " " " " " " " "	No. 8.....
" " " " " " " " " " " "	No. 9.....
" " " " " " " " " " " "	Charcoal.....
" " " " " " " " " " " "	Spades, Steel Edge, No. 1, 2 and 3.....
" " " " " " " " " " " "	Steel Edge Socket Spades, without
<b>Handles.....</b>	<b>8.50</b>
<b>Ames' Steel Edge, D Handle, Round Point</b>	<b>10.00</b>
<b>Shovels.....</b>	<b>9.50</b>
<b>Ames' Steel Edge, Long Handle, Round</b>	<b>12.00</b>
<b>Point Shovels.....</b>	<b>12.50</b>
<b>Ames' Cast Steel Shovels, polished, No. 2.....</b>	<b>12.50</b>
" " " " " " " " " " " "	No. 3.....
" " " " " " " " " " " "	round.....
<b>point.....</b>	<b>12.50</b>
<b>Ames' Cast Steel Spades, polished, heavy.....</b>	<b>13.00</b>
" " " " " " " " " " " "	light.....
" " " " " " " " " " " "	Flower Garden Spades, pol-
<b>ished.....</b>	<b>7.00</b>

Bar Lead, \$3 to \$3.50 per 100 pounds; Shot, assorted numbers, 95 cents per bag, "put up in good shipping order." The price of freights then depended upon the state of the Ohio River. In the St. Louis Price Current, Shipping and Commercial List, a copy of which accompanies these quotations, we notice the following prices:

Axes, per dozen :

Collins.. .. .	\$14.00	@ \$16.00
Others .. .. .	18.00	@ 14.00

Others.....	12.00	@	14.00
Cordage, per pound :			

Manila.....	.12½ @	14
Tanned Bone.....	60 @	10

Tarred Rope.....	.09	@	.10
Nails, per pound:			

Pittsburgh.....	.04 $\frac{3}{4}$ @	.05
June 1st.....	.04 $\frac{3}{4}$ @	.05

Juniata.....	.04 $\frac{3}{4}$ @	.05
Boston.....	.05 $\frac{1}{2}$ @	.06

difficulties with which Portland has to contend in holding her trade in a territory naturally her own, and in which she ought to have no trouble to maintain her supremacy:

To Albany from San Francisco, 693 miles, 23 cents per 100 pounds

To Albany from Portland, 79 miles, 18 cents per 100 pounds.

To Drains from San Francisco, 616 miles, 42 cents per 100 pounds.

To Drains from Portland, 169 miles, 91 cents per 100 pounds.

To Grant's Pass from San Francisco, 476 miles, 99 cents per 100 pounds.

To Grant's Pass from Portland, 296 miles, \$1.12 per 100 pounds.

To Ashland from San Francisco, 432 miles, \$1.22 per 100 pounds.

To Ashland from Portland, 340 miles, \$1.30 per 100 pounds.

Thus it will be seen that San Francisco merchants can ship Nails to Albany, right at the very door of Portland, a distance of 693 miles, for 23 cents per 100 pounds, while Portland has to pay to the same point, a distance of only 79 miles, 18 cents. To Drains, a distance of 616 miles, San Francisco can ship Nails for 42 cents per 100 pounds, while Portland has to pay 91 cents for a distance of 169 miles. To Grant's Pass, a distance of 476 miles, San Francisco can ship Nails for 99 cents per 100 pounds, while Portland has to pay \$1.12 for a distance of 296 miles. To Ashland, a distance of 432 miles, San Francisco can ship Nails for \$1.22 per 100 pounds, while Portland has to pay \$1.30 for a distance of 340 miles.

In addition to the foregoing differences, which apply fairly to all points south of Albany, there is a still greater injustice, and for which it seems difficult to find any explanation, and that is in the fact that Nails can be shipped to Albany and reshipped to points south of Albany at a lower rate than they can be shipped from Portland direct to destination. For instance, the rate on Nails is from:

Portland to Drains.....	\$0.61
Portland to Albany.....	\$0.18
Albany to Drains.....	.19— .37

Or a difference in favor of reshipment of \$0.24

So that Albany merchants can buy Nails in Portland at the same figures named to the Drains merchants, ship them to Albany and reship to Drains, and make a profit of 24 cents per keg.

It is considered that unless relief is afforded Portland jobbers by the Southern Pacific Railroad, either voluntarily or involuntarily, through the action of the State Railroad Commission, it is but a question of time when the large jobbing houses of Portland will be obliged to establish branch warehouses at Albany, as has already been done by one of the leading grocery houses of Portland. It is stated that by a joint arrangement between the Southern Pacific and Northern Pacific Railroad companies, San Francisco dealers can ship Nails to Spokane over the entire length of both lines of road, a distance of more than 1350 miles, for a rate of \$1.27 per 100 pounds; while Portland has to pay \$1.30 to Ashland, a distance of but 340 miles.

## Hartley & Graham.

UNDER DATE September, 1891, the above firm issue a complete catalogue of Arms and Ammunition. This is the first catalogue they have issued since their removal to their commodious and handsome store, 313-315 Broadway, where they represent the Union Metallic Cartridge Company, Bridgeport Gun Implement Company, Remington Arms Company, besides many other American and foreign manufacturers. The catalogue contains 115 large pages fully illustrated, with price-lists, also a price current and discount sheet. The arrangement of the book is admirable, the illustrations clear and distinct, the whole work showing much care in its preparation. Having purchased the entire stock of the B. Kittredge Arms Company, Cincinnati, they offer special bargains in Guns, Rifles, Revolvers, &c.,

at attractive prices. These goods are catalogued in a separate pamphlet, with net prices to dealers only.

## It Is Reported—

That R. Walter Morris has taken the old stand at 1217 Columbia avenue, Philadelphia, and is stocking up with Hardware and Electrical supplies.

That burglars effected an entrance to Jack & Rogers' Hardware store at Tekamah, Neb., on September 21. They were frightened away, however, before completing their work, and secured only the cash drawer, containing about \$10.

That the Hardware store of Gross, Fritzinger & Co., Slatington, Pa., was destroyed by fire on September 25. Loss about \$15,000, partly insured.

That Kernaghan Bros., Prince Albert, Manitoba, dealers in Hardware and Tin, are moving into more commodious premises.

That C. M. Loomis has recently commenced the Hardware business at Lincoln, Neb.

That Curtin & Clark Hardware Company, St. Joseph, Mo., owing to a large increase in their business, will make an important addition to their establishment, by which they will be better able to take care of their trade.

That Frank Bailey, dealer in Hardware Duncombe, Iowa, has sold his stock and business to Creed & Stillwell, Webster City, Iowa.

That J. J. Kelley of Harmony, Minn., has opened a Hardware store at Simpson, in that State

That W. C. Orum of Ottawa, Ill., has purchased a half interest in the Hardware and Stove store of B. H. Quick. The firm name will be Quick & Orum.

That John Amon will open a Hardware store at Perrysburg, Ohio, in a few weeks.

That the Hardware store of Davega & Co., Sheffield, Ala., was destroyed by fire on the 20th ult.

That H. K. White, Marion, N. Y., has sold out his Hardware business.

That Henry Carpenter contemplates entering the Hardware business at Gouverneur, N. Y.

That D. W. Stiver has embarked in the Hardware business at Huron, S. D.

That Charles L. Barker, bookkeeper, and Fred. G. Belden, head clerk, in the Hardware store of Peirson & Son, Pittsfield, Mass., have resigned their positions, and in company with John S. Moore of West Stockbridge will go into business for themselves. The new firm will be located in the England Block and will conduct business under the firm name of Barker, Belden & Co. Messrs. Barker and Belden have been with Peirson & Son for some years, and are accordingly thoroughly familiar with the details and requirements of the Hardware business.

That Hanson, Webber & Dunham, Waterville, Me., dealers in Hardware, Stoves and Agricultural Implements, have opened a branch store, in which they will handle Stoves exclusively.

That the firm of Burritt & Fenn, Hardware merchants at Port Byron, N. Y., has been succeeded by O. W. Burritt & Bro. The new firm will move to larger and more commodious quarters.

That the Banks Hardware Company have been incorporated at Henderson, Ky., the incorporators being S. J. Banks, S. W. Norris and Jas N. Banks. The capital is \$15,000.

That the copartnership existing between J. F. and C. B. Edwards in the Hardware business at Oxford, N. C., has been mutually dissolved. C. B. Edwards has sold his interest to T. W. Winston, who with J. F. Edwards will continue the business.

That J. C. Thrailkill, Marengo, Ohio has disposed of his Hardware business.

That Stoddard Bros.' Hardware store at Reed City, Mich., was burglarized on the 9th inst., the stolen booty being valued at \$200.

That W. K. Stafford, for 20 years manager of the Hardware department of Walton Bros.' store at Fairbury, Ill., has purchased a store in Forest, Ill., in which he will conduct the Hardware business.

That T. J. Adams has purchased a store at Jacksonville, Fla., in which he will put a \$30,000 stock of Hardware.

That W. H. Smith & Co., Mahoningtown, Pa., are erecting a fine addition to their Hardware establishment, which will be completed, it is expected, in October.

That Frank McLean, Arena, N. Y., has purchased the Hardware stock of Elbert Burr, and will continue the business.

That George W. Edgerly has opened a stock of Hardware at Alton, N. H.

That W. H. Matthews, Fort Edward, N. Y., has sold his Hardware business to Charles W. Boutell

That W. V. Elliott has commenced the Hardware business at Nogales, Ariz.

That A. W. Gray is the proprietor of a new Hardware store at Bidell, Ill.

That Hoyt & Reeves have entered the Hardware and Lumber business at Maple Park, Ill.

That Alexander & Robbin are a new Hardware firm at Marshall, Ind.

That Geo. Macombe, dealer in Hardware Auburn, Cal., has sold out his business.

That Bodyfield Bros. have embarked in the Hardware business at Hartwick, Iowa.

That McCaslin & Parsley have disposed of their Hardware and Tin business at Litchfield, Ill.

That Arthur Quackenboss is a Hardwareman who has recently entered business at Swaledale, Iowa.

That C. Walker is the proprietor of a new Hardware store at Wilton, Iowa.

That A. F. Nixon, dealer in Hardware, Stoves and Guns at Everton, Mo., has sold out his business.

That the firm of Brandley, Jones & Co., Bozeman, Mon., have been dissolved, H. A. Jones retiring.

That J. H. Kohlmeier & Co., dealers in Hardware at Norwalk, Ohio, advertise their business for sale.

That John Caldwell has entered the Hardware business at Colman, S. D.

## Exports.

PER BARK LENCADIA, FOR ADELAIDE, AUSTRALIA.

By Henry W. Peabody & Co.—2 cases Hardware, 1 case Agate Ware, 12 crates Stoves, 1 case Rakes, &c., 8 packages Hardware, 1 case Fire Arms, 1 box Hoes, 2 cases Traps, 11 cases Tacks, 1 dozen Mangles, 14 crates Grindstones, 1 case Hardware, 5 dozen Wringers, 3 cases Apple Parers, 7 dozen Wringers, 3 boxes Hardware, 2 boxes Nails, 3 boxes Drills, 4 cases Wire Cloth, 3 packages Hardware, 1 case Traps, 12 dozen Razor Strops, 1 case Hardware, 1 case Tools, 7 cases Agate Ware, 3 gross Traps, 1 box Shears, 1 barrel Blocks, 62 packages Hardware.

PER SHIP ROYAL GEORGE, FOR MELBOURNE, AUSTRALIA.

By Alfred Field & Co.—5 cases Drills, 2 cases Bolts.  
By Hartley & Graham.—79 cases Cartridges, 1 case Fire Arms.  
By Metal Stamping Company.—2 cases Fire Arms.  
By S. Hoffnung & Co.—1 case Lamp Goods.  
By Winchester Repeating Arms Company.—36 Guns, 6000 Cartridges.  
By F. & J. Meyer.—3 cases Hardware.  
By Strong & Trowbridge.—1 case Agate Ware, 1 case Hardware, 6 dozen Lampware, 1/2 gross Air Rifles.



By W. H. Crossman & Bro.—501 pounds Iron Bolts, 1 case Hardware, 1 case Hatchets, 2 cases Air Rifles, 1 case Rakes, 2 cases Ladders, 17 Boxes Oil Stoves, 2 cases Hatchets, 11 packages Lamp Goods, 2 cases Hardware.

By Arkell & Douglas.—558 reels Barb Wire, 4 barrels Wire, 1 case Cordage, 1 package Pumps, 6 cases Razor Stropps, 40 dozen Brushes, 7 Forges, 1 dozen Wringers, 306 cases Cartridges, 170 kegs and 44 cases Nails, 7 cases Lanterns, 10 dozen Axes, 5 cases Lampware, 12 cases Tools, 26 cases Hardware, 16 cases Shovels.

By Australasian-American Shipping Company.—2 cases Sandpaper, 1 case Fire Arms, 1 case Fire Arms, 3 cases Forks and Hoes.

PER BARK ELIZABETH, SEPTEMBER 18, 1891, FOR ADELAIDE, AUSTRALIA.

By Manhattan Brass Company.—3 cases Brass Goods.

By Rogers, Smith & Co.—4 boxes Plated Ware.

By Edward Miller & Co.—28 packages Lamp Goods.

By Weaver & Sterry.—20 kegs Nails.

By S. Hoffmann & Co.—9 Carpet Sweepers.

By Winchester Repeating Arms Company.—122 Guns, 50 sets Tools, 100,000 Cartridges, 50,000 Primers.

By W. H. Crossman & Bro.—1 gross Barometers.

By Australasian-American Shipping Company.—16 cases Plows, &c., 1 cases Clamps, 1 case Wood Hames, 7 cases Plows.

By Arkell & Douglas.—8 Guns, 3 Pumps, 70 dozen Dies, 80,000 Bolts, 1 dozen Mangles, 6 dozen Agate Ware,  $\frac{1}{4}$  dozen Oil Stoves, 2 ranges, 33 dozen Builders' Hardware, 8 dozen Tools, 130 dozen Axes.

PER BARK NORA WIGGINS, SEPTEMBER 24, 1891, FOR PORT ELIZABETH, SOUTH AFRICA.

By John A. Gifford.—3 packages Hardware. By the Goults Mfg. Company.—2 cases Pumps, &c.

By William E. Peck.—1 case Hardware, 4 cases Agricultural Implements.

By Corner Bros. & Co.—20 kegs Nails, 2 racks Churns.

By Coombs, Crosby & Eddy.—9 Corn Shellers, 40 dozen Edge Tools, 18 kegs Nails, 5 kegs Brads, 11 dozen Saws, 125 pounds Washita Stone, 6 Scale Beams, 4 Freezers, 7 Meat Choppers, 2 cases Fuses, 6 Churns.

By John Norton's Son.—120 pounds Corn Shellers, 12 Shellers, 3 dozen Guns

By W. H. Crossman & Bro.—200 kegs Nails, 128 packages Agricultural Implements, 124 cases Hardware, 2 cases Toilet Paper, 4 crates Ladders, 500 reels Barb Wire, 24 coils Sisal Rope.

PER BARK PEERLESS, SEPTEMBER 26, 1891, FOR PORT NATAL, SOUTH AFRICA.

By Arkell & Douglas.—2 cases Bench Screws, 1 case Forks, 2 cases Pumps, 1 case Mangles, 30 crates Washing Machines, 7 boxes Lamps, 130 dozen Axes and Hatchets, 26 cases Hardware.

## Paints and Colors.

*It should be understood that the prices quoted in this column are strictly those current in the wholesale market, and that higher prices are paid for retail lots. The quality of goods frequently necessitates a considerable range of prices.*

Regarding the rumored new competitors in the White Lead corroding line, nothing new has transpired and all persons interested seem to be quietly awaiting developments. In the place of this matter, semi-demoralization in the Linseed Oil market is now the paramount feature of interest, bearing as it does in greater or less degree upon various lines of Paints, but up to the present time evidence is wanting of any radical changes in prices of the more staple articles or specialties in which Oil enters as a prominent ingredient. The belief gains ground that cheap Oil is here to stay, and that modification of prices for Oil Colors, Mixed Paints, &c., is bound to come sooner or later. Buyers' operations are tempered more or less by that belief and business is consequently restricted more or less. Still, leading distributors state that most goods have passed into the channels of consumption to quite the full extent for the season and express the opinion that weather conditions have helped along the spread of Paint considerably during the past two or three weeks.

**White Lead.**—In this line there has been no change whatever. Corrodors state that the movement of their product is satisfactory, being somewhat larger than it was at the corresponding period last year. Manufacturers of the cheaper varieties also claim to have experienced a good seasonable demand, and jobbers, while not particularly enthusiastic, appear to be doing their share. On corrodors' list prices no changes have been made, nor are there any to note on Mixed Leads; but the liberties taken by jobbers heretofore are continued, so that bottom net rates for large lots, rather than list prices, reflect actual market value for ordinary jobbing quantities.

**Zincs.**—The demand for American Oxide runs along in the usual rut, and indicates a fairly liberal consumption by manufacturers of Mixed Leads, &c., besides quite the average distribution for the season in a jobbing way. Foreign brands arrive in quantities just about sufficient for the outlet, which at present is merely fair. On the part of sellers there is no change. The combination prices are adhered to and competition is still extremely tame.

**Colors.**—In the market for Dry Colors there is no perceptible change. Among manufacturers of the cheaper varieties competition is rather keen and keeps prices irregular, but first-class goods are holding their own, with the movement generally satisfactory. The unsettled condition of the Linseed Oil market reflects upon Oil Colors in some degree, but no important changes in prices are announced by manufacturers.

**Miscellaneous.**—For cargo lots of Block Chalk there is some demand, but bids are about 25¢ below sellers' ideas and little business passes. Spot supply is ample for consumers' wants. Whiting is steady at old prices, as is also Paris White, with the distribution running along about as usual at this season.

## Oils and Turpentine.

The movement in Animal and Vegetable Oils has been chiefly of routine character, and aside from greater weakness in prices of Linseed Oil, the market is wholly devoid of new feature. Export interest is hardly as spirited as it usually is at this season of the year, owing in part to the fact that foreign markets are carrying considerable stocks, and large home consumers manifest rather indifferent interest. As for speculative interest, none is visible outside of Cotton Oil, and even there the venturesome ones move with extreme caution.

**Linseed Oil.**—The pressure to sell Western brands in this and other Eastern markets has finally reached a phase that prompts city crushers to take an aggressive position, and competition is now very keen at all points. The city concerns have dropped their price to 40¢ for domestic seed product, with usual allowance for package, and agents of Western brands have not only offered openly at 37¢, but solicited bids of 36¢ for carload lots. These low prices have failed to stimulate buying to any marked degree thus far, but the reduced cost of pure Oil has practically driven substitutes and adulterants from the field, and thus exerted a beneficial influence. That prices will be no higher in the immediate future is almost a foregone conclusion, since the cost of seed is likely to be kept down by the enormity of the crop. Low prices have led to a considerable export trade in seed, but whether the foreign demand will offset the heavy supply is problematical.

**Cotton-Seed Oils.**—There have been additional sales of new crop crude Oil at 30¢ @ 31¢ for October delivery, and a fair demand at the inside price is noted at this writing. New refined is taken hold of in a rather indifferent manner, however, and contracts made thus far show scarcely as

good returns as do those of spot goods. Thus prime new Summer Yellow went at 34¢ @ 35¢ for November delivery, while choice old brought 38¢, prime do. 35¢, butter quality 40¢ @ 41¢ and "off" grade 31¢ @ 33¢. Present indications are for a large output the coming season, with more than last year from independent mills, and it seems to be the general opinion that a heavy export business is necessary to bring about a higher level of prices.

**Fish Oils.**—The deal between producers and pressers of Menhaden Oil has been completed and the season's production is virtually under the control of orders. With the situation thus clearly defined, pressers are stronger in their views and quote 2¢ advance of Tanners' Oils and 1¢ on Pressed and Bleached. There has been no change of importance on Whale or Sperm Oils.

**Lard Oil.**—The movement in price has been unimportant, but at the close a firmer undertone prevailed, the result chiefly of more liberal buying for both export and home account.

**Spirits Turpentine.**—Very little change is shown in the statistics of stocks at the leading centers, but the supply here seems to have exceeded the demand and led to urgency to sell that forced prices off to 37 $\frac{1}{2}$ ¢ for regular and 38¢ for machine barrels.

## A New Tin-Plate Works.

A few months ago we noted the fact that the Marshall Bros. & Co., Beach and Marlborough streets, Philadelphia, Pa., were making preparations for the manufacture of tin plates at their galvanizing works. We now learn that the machinery has been completed and the making of tin plates begun on a practical scale. The present capacity of the works is about 75 boxes per day, or 400 boxes per week, and within two or three weeks the company expect to double this capacity. They have also now ready and in operation a tinning bath for dipping bright tin plates of the larger sizes. The present product isterne plates, which are being put on the market under the name of Penn Treaty. They describe these as made of the very best soft steel of guaranteed quality, and coated by the oil process, giving, it is said, a full and heavy-coated sheet, with a very smooth and even surface. The size of the sheets will be made to suit the trade, beginning with 20 x 28, running up to 30 inches wide, and in length to 8 feet. The long lengths are being specially recommended for gutters, car roofs, &c. The small sizes, 20 x 28 and 20 x 56, will be put up in boxes of 56 and 25 sheets, with the weight stenciled on each box. The point to which they would direct special attention is that the price of the plates will be by the pound.

Edwin Harrington of the well-known firm of E. Harrington, Sons & Co. died at his residence, Bethel, Vt., on September 24. The deceased was in his sixty-seventh year, and having amassed a considerable fortune virtually retired from business about two years since, leaving his interests in the hands of his brother-in-law, Mr. Haskins, and his two sons, M. H. and E. L. Harrington, the two first named having been connected with the business since its inception in 1866.

The works of the Menasha Wood Split Pulley Company, at Menasha, Wis., which were destroyed by fire September 14, are being rapidly rebuilt, and it is expected to have them in running order within six weeks. The plant and its equipments will be entirely new and modern, and the facilities for manufacturing the Menasha hickory pulley, the company's specialty, will be greatly increased.

### New Process Netting.

The Wright & Colton Wire Cloth Company, Worcester, Mass., are introducing a hard steel wire netting, which is galvanized after it is woven, the principal



Fig. 1.—Ordinary Soft Wire Netting After Test.

feature being its stiffness as compared with netting made from soft or annealed wire. There is also an improvement in the twist, one-half of which is a right-hand and the



Fig. 2.—Hard Steel Netting After Test.

other a left-hand twist, leaving a small eye in the center of each twist, through which an 8-ounce tack may be driven for fastening it to posts or rails. The manufactur-

In regard to this netting the manufacturers say:

A serious trouble which all the netting manufacturers have been trying to obviate has been to get a uniform tension on the selvedge wire, and just enough of it into the web on each side so that neither will be too long or too short to correspond with the opposite one, and even when this is done, in a great many cases the passing of the woven web through a kettle of molten metal to galvanize it will make it baggy and buckley. The fabric in passing through the melted metal must attain the same temperature, which heat greatly affects the rigidity of the wire for the period during which it remains in the metal bath. At this time the weight of the metal presents a considerable resistance to the fabric, and stretches that part of it which will stretch the easiest—namely, the center of the web, while the two selvedge wires cannot stretch. Thus it is seen how difficult it becomes to make a twisted wire netting of No. 19 or No. 20 wire soft or annealed, and always have it lay perfectly straight and flat on the floor. With the New Process Netting all these difficulties are overcome by using a much harder steel wire that is very springy and at the same time very strong.

We are advised that a test as to relative stiffness of the new and old style netting was made a few days since by the manufacturers, and it was found that netting made from soft wire, as is used in the ordinary galvanized poultry netting, would not stand a weight of 192 pounds on a roll 50 feet long rolled on a 18-inch cylinder without bulging it and completely ruining it for use, narrowing it down several inches, as shown in Fig. 1. A roll of exactly the same dimensions and under the same conditions, made from the hard wire by the new process, was subjected to a weight of 384 pounds, just double the other weight. The netting was not damaged a particle, and after the weight was removed it was found that on a 36 inch roll it had lost but  $\frac{1}{4}$  inch of its original width, Fig. 2. The above cuts were made from photographs of the rolls after the tests. By the use of automatic machinery, which has been specially designed by the company to make these goods, the company are enabled, they advise us, to offer this netting to the trade at the same price as the ordinary netting.

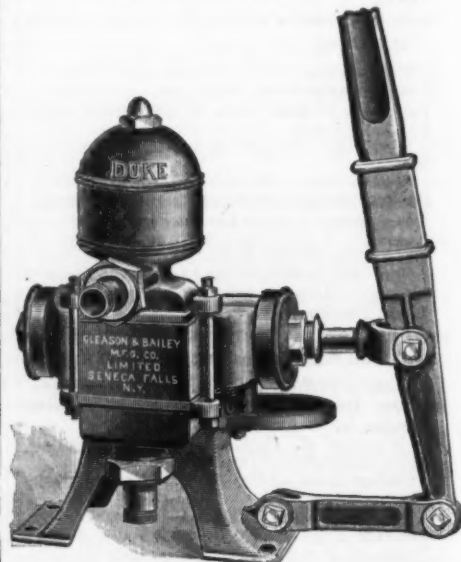
### The Perkins Boss Husker.

H. H. Perkins Mfg. Company, Kewanee, Ill., are offering the trade this article, as illustrated herewith. The pins are forged from steel, polished and nickeled, after which they are strapped with soft tough leather. It is stated that the pins are of such shape that the wearer commands a firm hold upon them, and that all adjustments can be made instantly. Three style of pins are now made, known as E, A and B. The E is made to use with or without glove, has sliding center sleeve, brass nut and clamp (for taking up slack, which can be done instantly) and flat curved point. The A pin is shaped like the E, with same principles of adjustment,

the E and A. All these pins are forged from steel rod, polished and nickeled with a heavy coat of nickel. Goods are packed one dozen in box. It is stated that only the best quality of soft, pliable, tough leather is used on these huskers, and that the company have paid over \$4000 for leather this year. The increasing demand for these goods indicates that they are finding favor among the farmers.

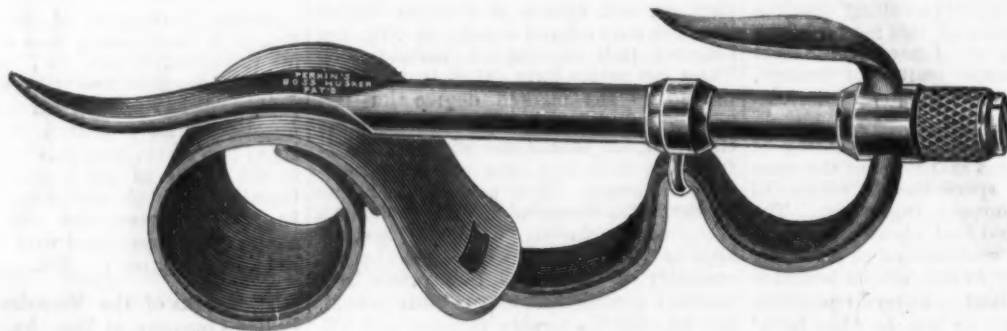
### The Duke Double-Acting Suction and Force Pump.

The Gleason & Bailey Mfg. Company, Limited, Seneca Falls, N. Y., have brought out under the name Duke a double-acting suction and force pump,



The Duke Double-Acting Suction and Force Pump.

which they claim possesses exceptional efficiency. The accompanying illustration represents the general appearance of the pump. The valves are all grouped together under the air chamber shown in the cut, and are very easy of access, requiring only the removal of two bolts, so, it is said, the valves can be replaced without the services of a mechanic. All waterways and openings are as large as possible, making the operation of the pump easy. The cylinder heads are screwed in place of being bolted, so little labor is required to get at the plunger. The suction connection is placed in a vertical position, obviating the necessity of an elbow, which is required where the connection is horizontal. The pump has let-off plugs in cylinder to prevent freezing in winter. There is also a dish directly under the stuffing gland to catch the drip, if any occurs when the packing in the stuffing gland



The Perkins Boss Husker.

ers claim that the netting will roll out on the floor and lay flat without being either crooked or baggy; that the wire is stiff and rigid, and that when being put up it needs no stretching, as it is already straight and lies as flat as a piece of tin.

and has an extra hand piece of leather, while the part that covers the forefinger is cut and shaped to fit the joint of finger. Style B has a buckle adjustment on back, otherwise leathered like the A. The point of B is round and curved instead of flat like

becomes worn out. A nipple connects the dish to a small lead pipe to carry off the drip. The pump has a  $2\frac{1}{2}$  inch cylinder, a  $1\frac{1}{2}$  inch suction pipe, and a 1-inch discharge pipe connection. It is made both iron and brass lined.



**Patton Stock and Die.**

Frank S. Patton, Twenty-ninth and Holly streets, Kansas City, Mo., is introducing a stock and die, as shown in Fig. 1. The stock is hinged, Fig. 2, and is

the tool will turn out more and better work than done in the ordinary manner. The point is made that such a thing as a screw or thread being spoiled by cuttings clogging in the die and tearing off the thread in turning off the die is an impossi-

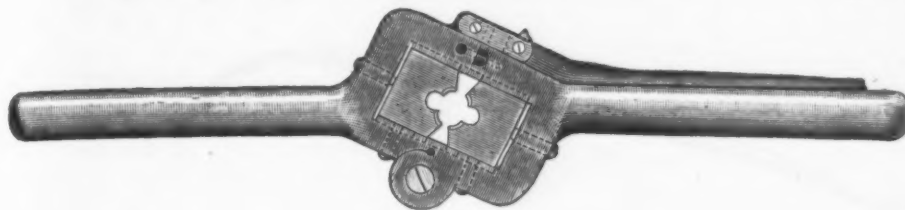


Fig. 1.—Patton Stock and Die.

opened to be taken off of the side of the bolt or thread which has been cut without being turned backward. The side of the stock opposite the hinge is provided with two lugs, one on each half of the stock. On one of these lugs is pivoted a pair of links, and between the other ends is pivoted a cam lever. The links close over the other lug, and the lever lays close to the handle of the stock, thereby forming a solid stock. The cam lever prevents the stock from being accidentally opened, and facilitates the opening of the stock when desired. On the back side of the lever is a small projection, which comes in contact with the lug when the lever is moved back and causes the links to raise, allowing the tool to open. The adjustment screws for the dies are located at the ends of the die, as indicated by the dotted lines, and are turned from the outside. These provide all the necessary adjustment, and when the stock is closed, it is claimed, finished thread is made at one cut. The dies are held in place by binding screws located on the back side of the stock near the hinge. The guide which is secured to the lower part of the stock is in two parts, and is milled out to fit over the die, which projects a short distance through the stock on the lower side. The two parts of the guide are fastened to the corresponding parts of the die by one screw in each part; consequently the guide is adjusted whenever the die is moved. The guide can be taken off and the tool

bility when this tool is used. It is stated that the tool is made entirely of steel, with wearing parts properly hardened, and finished in a first-class manner, and that only



Lockwood's Flexible Leather Back Curry Comb.

the finest grade of goods will be put upon the market.

Immigration is heavy this year. The Bureau of Statistics reports that for the

**Lockwood's Flexible Leather-Back Curry Comb.**

W. J. Lockwood, for whom John H. Graham & Co., 113 Chambers street, New York, are sole agents, is introducing the comb illustrated herewith. It is made with leather back, heavy steel bars, the bars being secured to the back with large oval-head tinned rivets. The apple wood handle is securely fastened to a substantial tinned shank, the shank being held in place by a rivet passing partly through the handle. Underneath the bars is a narrow piece of spring steel, which straightens the back when released from the pressure of the hand. The comb presents a neat and attractive appearance. The advantages of the substantial flexible back will be readily appreciated, as the comb can be bent, allowing the bars to follow closely the curves and depressions of the animal, and rendering it well adapted for working about the legs. When not compressed by

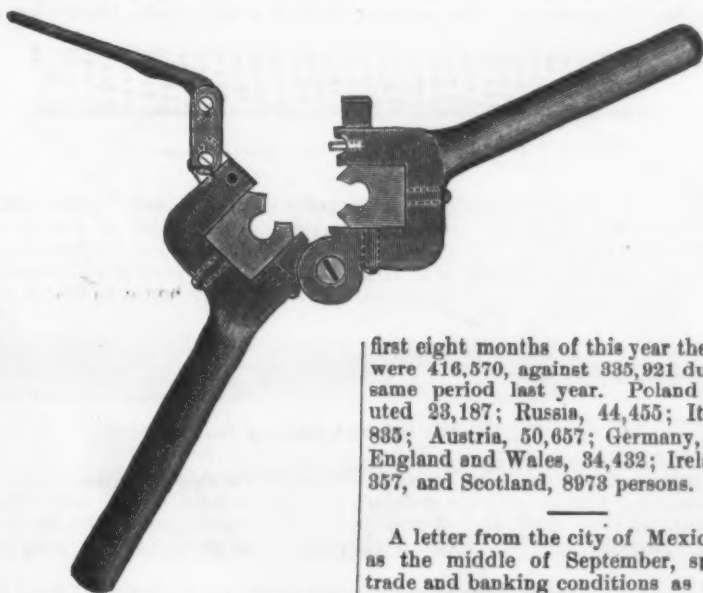


Fig. 2.—Stock and Die Open.

used without it to facilitate cutting close to a bolt head, collar or shoulder. This avoids the necessity of turning the tool over to cut close to bolt heads, &c. The manufacturer claims a great saving in time and in the wear and tear of dies; also that

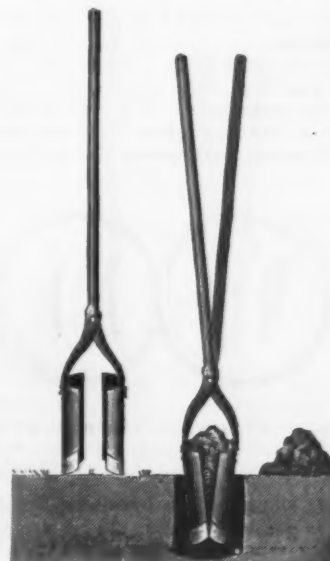
first eight months of this year the arrivals were 416,570, against 335,921 during the same period last year. Poland contributed 23,187; Russia, 44,455; Italy, 54,835; Austria, 50,657; Germany, 83,396; England and Wales, 34,432; Ireland, 42,357, and Scotland, 8973 persons.

A letter from the city of Mexico as late as the middle of September, speaks of trade and banking conditions as still improving. The larger business houses are not dependent on the local banks, and are, in fact, bankers themselves. They have huge capitals and are able to stand alone. The German houses can get money at 4 and 5 per cent. in Germany, and employ it here at a great profit. It is a conspicuous advantage to have this backing at home instead of having to pay from 8 to 10 per cent. in Mexico.

the hand it retains the shape and advantages of a metal-back comb. It is intended to retail at 50 cents, thus affording the merchant a good profit. For information regarding price, &c., see Trade Report.

**Capital City Digger.**

Columbus Mfg. Company, Columbus, Ohio, are offering the trade a digger, as illustrated herewith. The digger has iron



Capital City Digger.

handles, and is so constructed that it may be easily taken apart and used as a shovel. The whole length of the digger is 5 feet,

while the weight per dozen is 200 pounds. The manufacturers state that it takes out loose dirt, stone or sand, and is adapted for work in clay, sand or gravel. The advantages claimed for the digger are that the handles being in one piece, there are no bolts to come loose; that the handles

#### K. D. Vehicle Shafts.

Beebe Mfg. Company, Racine, Wis., are introducing these shafts, as illustrated herewith. In this form the shafts have no mortise or tenon, the wood and steel parts being held together by eight carriage

Fig. 3, and when one side of the file part is worn out the rasp part is put on the reverse side, bringing a new file surface into use. It is stated that the file part will outlast the file side of two ordinary horse rasps. One of the strongest points made in favor of the rasp is that the rasp plate

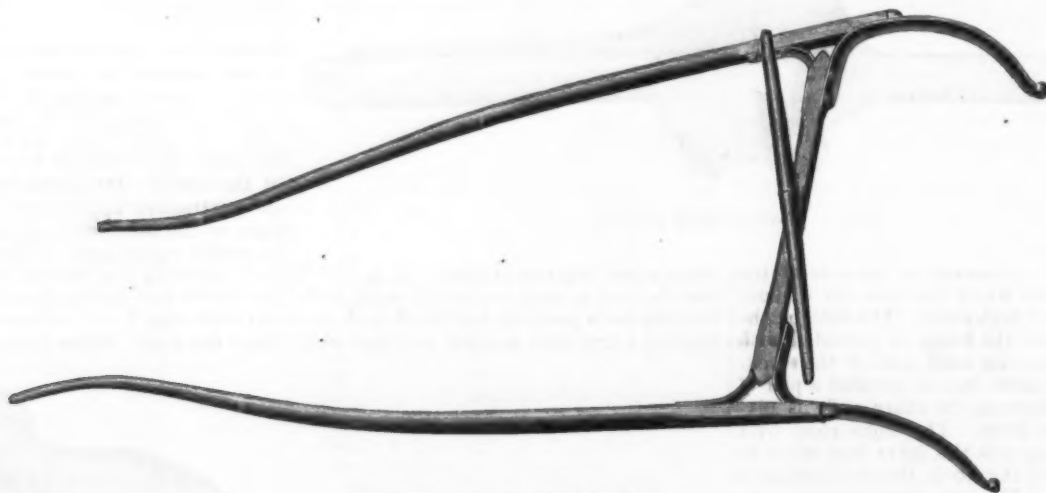


Fig. 1.—K. D. Vehicle Shafts.



Fig. 2.—Shafts Knock Down for Shipping.

will not warp; that they are not clumsy, and that the tool will dig fast and easy.

#### Devore's Double Key Ring.

L. M. Devore & Co., Freeport, Ill., are introducing a key ring, as shown in Figs. 1 and 2. In Fig. 2, No. 1 shows the

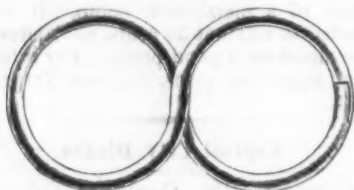


Fig. 1.—Devore's Double Key Ring.

ring properly closed; No. 2, the manner to proceed in opening; No. 3, the ends drawn free to pass each other; No. 4, the ends passed and the ring open to receive or remove the keys. It is stated that the form of the ring gives it the elasticity of a coil spring, and insures the wire against

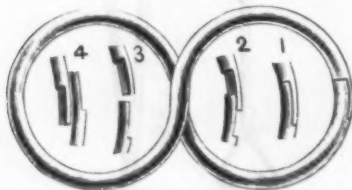


Fig. 2.—Showing the Operation of the Ring.

setting when a key is put on or taken off, and its points of contact are held securely. Having separate compartments, it admits of putting large keys in one section and small keys in the other, or keys used only in the light may be put in one section, and latch key or store key, often used in the dark, in the other, where they can be more readily found by the sense of touch.

and two shaft bolts. The shafts may be painted and trimmed knock down, and packed in the crate with the vehicle body, while a broken shaft is easily replaced. They are referred to as being stiff and strong, and as readily put together by any one. The above firm are manufacturing a pole upon the same principle, an advantage being the absence of any bend in the wood.

#### Improved Peeler Horse Rasp.

Troy File Works, Troy, N. Y., are offering the trade this rasp, as seen in the accompanying illustrations. The cutting

can be resharpened with a file, and given a cutting edge equal to that of a chisel. It is also claimed that it will last longer than two ordinary rasps, is in every respect as convenient, and requires not more than half the strength in working it. The manufacturers refer to the favor with which it is received and give testimonials as to its merit.

#### Improved Sinks.

Bignall Mfg. Company, Medina, N. Y., are manufacturing cast-iron sinks of improved construction, the design being to

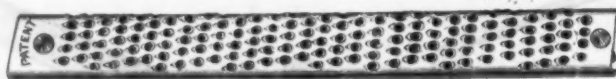


Fig. 1.—Improved Peeler Horse Rasp.

plate, Fig. 1, of the rasp is made of finely-tempered saw steel, and can be resharpened by using a round file. The teeth are gouge shape, and are referred to as making as clean a cut as a chisel. It is claimed

make a stronger and lighter sink by distributing the metal in such a way as to withstand the shock incident to transportation. It is described as resembling the iron frame of a house, so that if the thick-



Fig. 2.—File to which Rasp is Fastened.

by the manufacturers that the Peeler has an advantage in temper over the ordinary horse rasp, which is made of soft steel in order to properly raise the teeth on the

ness of the side or bottom could be taken off, the frame would be left. The corners are also thickened at the miter line and slope both parallel to and from the outer

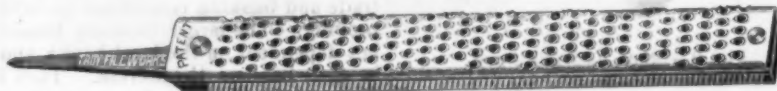


Fig. 3.—Rasp and File Complete.

punched side, and is tempered afterward. The file part of the rasp is shown in Fig. 2, and is cut on both sides. The rasp is fastened to the file by a screw in each end,

to the inner edge. They refer to this peculiar corner as effective in reducing the number of broken corners, of which they had many before adopting this form.



**The Warner Burglar-Proof Lock.**

Full-size illustrations are herewith given of a new burglar-proof lock for house doors now being manufactured by the Warner Lock Company, 411 and 412 Manhattan Building, Chicago. This lock is only of the regulation rim-lock size, being  $3\frac{1}{2}$  inches long, 2 inches wide and  $\frac{1}{2}$  inch thick, but it is claimed by the makers to be the strongest lock ever manufactured, and appears to be really burglar proof. The leading feature of the lock is an automatic slide which completely closes the keyhole on the opposite side of the lock when it is locked with the key from the inside of the room, Fig. 1. As the lock is screwed on the inside of the door, or is mortised in, it

and two tumblers to guard the bolt. The sliding plate has a reverse motion from the bolt. The bolt, which projects nearly  $\frac{1}{4}$  inch further than bolts ordinarily used, is made of cast iron, but every other part of the lock is constructed of cold-rolled steel. The shell, back and bolt catch are drawn into shape in special dies, as shown in Fig. 2. The lock is thus extremely strong, but it is very light, weighing only 8 ounces, which is less than half the weight of a cast-iron lock of the same size.

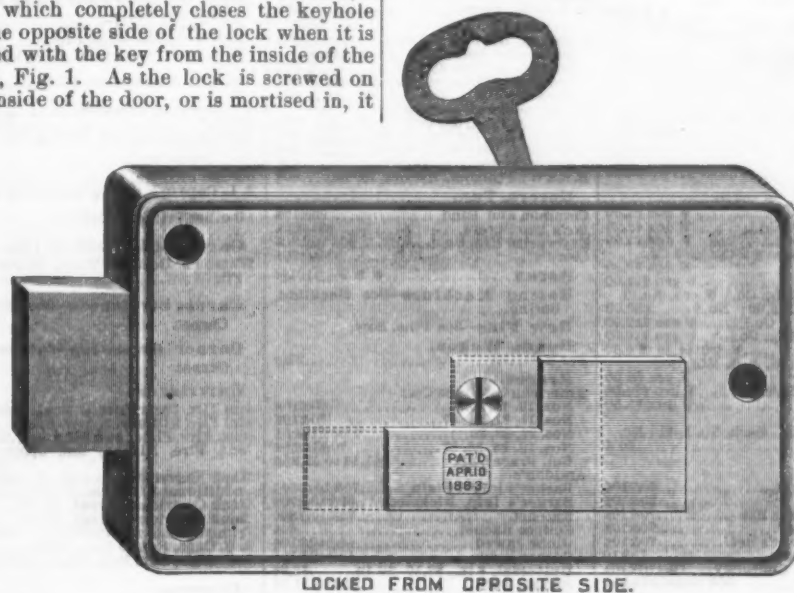


Fig. 1.—The Warner Burglar Proof Lock.

will be seen that the sliding plate is between the door and the lock, and is thus beyond the reach of a burglar, who can neither tamper with the slide nor penetrate the lock. If locked from the outside the keyhole is not closed, but the construction is such that neither nippers nor wire can throw the bolt. The key used is a small flat, skeleton key which requires only a narrow slot to admit it into the lock. Another feature of this lock is that a  $\frac{1}{4}$ -inch bit bores a large enough hole through the door. An escutcheon with a round dished hole is used to finish the keyhole. When the key is inserted it is sure to slip easily into the lock, as the key chamber is also dished or slightly hollowed

Every lock is reversible, fitting either right or left hand doors. While only one size is made, there are three styles of finish—antique iron, nickel plate and japan. The regular mortise knob locks and special night latches, made on the same principle, will soon be brought out by this company. Each lock is packed in a separate box. The manufacturers call special attention to the very moderate price at which this lock is sold and the stringent regulations adopted to maintain an established retail price.

The Berlin Bridge Company of Berlin, Conn., have just completed an order for

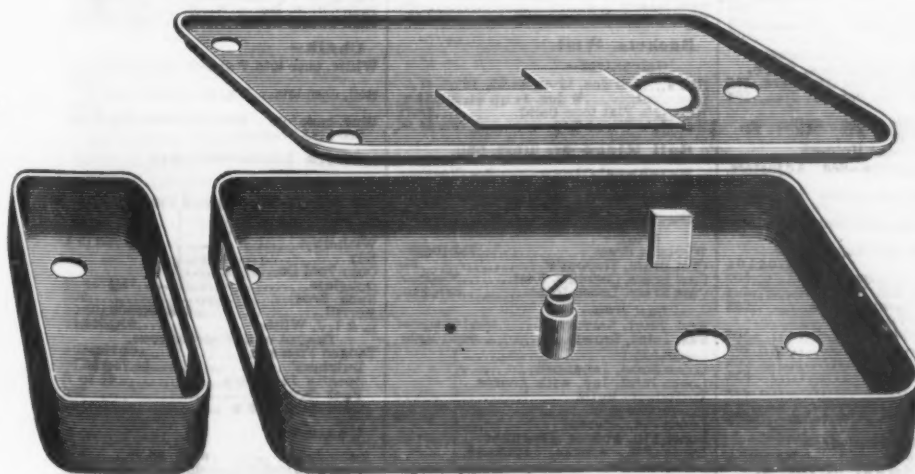


Fig. 2.—Showing Construction of Lock.

out for that purpose. There is thus no fumbling on the outside of the door to find the slot. This arrangement also enables even an unskilled person to put the Warner lock on a door.

The interior mechanism is remarkably simple, consisting of a revolving key head, an arm to work the outside sliding plate

iron buildings equal to 23 carloads, which have been consigned to the Companhia Nacional de Forjas e Estaleiros, Rio de Janeiro. The consignees are extensive shipbuilders and have heretofore bought supplies in England, but are now able under the treaty to obtain better goods at the same rates in the United States.

**CONTENTS.**

	PAGE.
Tin-Plate Machinery. Illustrated.....	531
Freight Rates on Merchant Marine Material	531
Safes. Illustrated.....	532
Important to Coal Men.....	535
San Francisco News.....	535
Sound Views on the Labor Question.....	536
Models, Inspection and Gauges.—II. Illus.	536
The Amalgamated Association—I.....	538
The Reeves Iron Company.....	539
Transportation at the World's Fair. Illus.	540
The Record of Franklin Furnace.....	541
New Shop of the Berlin Iron Bridge Company. Illustrated.....	542
New Publications.....	543
A New German Battleship.....	544
Changes in Rail Practice.....	544
World's Fair Notes.....	544
Forced Draft Arrangement on the Steamship City of Paris. Illustrated.....	546
A Natural Gas Suit.....	547
Editorials:	
The Business Outlook.....	548
Delivery of Manufactured Goods.....	548
Silver to the Rear.....	548
Steel vs. Iron.....	549
Discriminating Freight Charges.....	549
The Proposed Chicago Iron Exchange.....	549
Correspondence.....	550
The Week.....	551
Personal.....	551
Change in the Sliding Scale at Carnegie's.....	552
Manufacturing:	
Iron and Steel.....	552
Machinery.....	553
Hardware.....	553
Miscellaneous.....	553
Trade Report:	
Philadelphia.....	553
Louisville.....	554
Chicago.....	554
Pittsburgh.....	555
Cleveland.....	555
Cincinnati.....	556
New York.....	556
Financial.....	556
Coal Market.....	557
Metal Market.....	557
New York Metal Exchange.....	558
St. Louis.....	558
Detroit.....	558
British Iron and Metal Markets.....	558
Hardware:	
Condition of Trade.....	559
Notes on Prices.....	560
Trade Items.....	561
Trade Topics.....	562
Price-Lists, Circulars, &c.....	563
Some Old Invoices Illustrated.....	563
Portland, Ore., as a Hardware Market.....	565
Hartley & Graham.....	566
It Is Reported—.....	566
Exports.....	566
Paints and Colors.....	567
Oils and Turpentine.....	567
A New Tin-Plate Works.....	567
New Process Netting. Illustrated.....	568
The Perkins Boss Husker. Illustrated.....	568
The Duke Double-Acting Suction and Force Pump. Illustrated.....	568
Devore's Double Key Ring. Illustrated.....	569
K. D. Vehicle Shafts. Illustrated.....	569
Improved Peeler Horse Rasp. Illustrated.....	569
Improved Sinks.....	570
Patton Stock and Die. Illustrated.....	570
Lockwood's Flexible Leather-Back Curry Comb. Illustrated.....	570
Capital City Digger. Illustrated.....	570
The Warner Burglar-Proof Lock. Illus.....	571
Current Hardware Prices.....	572
Current Metal Prices.....	573

# CURRENT HARDWARE PRICES.

SEPTEMBER 30, 1891.

Note.—The quotations given below represent the Current Hardware Prices which prevail in the market at large. They are not given as manufacturers' Prices, and manufacturers should not be held responsible for them. In cases where goods are quoted at lower figures than the manufacturers name, it is not stated that the manufacturers are selling at the prices quoted, but simply that the goods are being sold, perhaps by the manufacturers, perhaps by the jobbers, at the figures named.

## Adjusters, Blind.

Domestic, 1/2 doz \$3.00, 3/4 doz \$3.50  
Excelior, 1/2 doz \$10.00, 3/4 doz \$10.50  
Washburn's Self-Locking, 3/4 doz \$20.10

Ammunition—See Caps, Cartridges, Shells, &c.

## Anvils.

Eagle Anvils, 1/2 doz \$15.50, 3/4 doz \$16.50  
Peter Wright's, 1/2 doz \$11.10, 3/4 doz \$11.50  
Armstrong's Mouse Hole, 1/2 doz \$11.50, 3/4 doz \$12.50  
Armstrong's Mouse Hole, Extra, 1/2 doz \$12.50, 3/4 doz \$13.50  
Trenton, 1/2 doz \$10.10, 3/4 doz \$10.50  
Wilkinson's, 1/2 doz \$10.10, 3/4 doz \$10.50  
Moore & Barnes Mfg. Co., 3/4 doz \$3.50

## Anvil Vise and Drill.

Millers Falls Co., 1/2 doz \$18.00, 3/4 doz \$20.00  
Cheney Anvil and Vise, 3/4 doz \$25.00  
Allen Anvil and Vise, 3/4 doz \$30.00  
Star, 3/4 doz \$45.00

Apple Parers—See Parers, Apple, &c.

## Augers and Bits.

Douglas Mfg. Co., 1/2 doz \$10.70, 3/4 doz \$11.25  
Wm. A. Ives & Co., 1/2 doz \$10.70, 3/4 doz \$11.25  
Humphreysville Mfg. Co., 1/2 doz \$10.70, 3/4 doz \$11.25  
French, Swift & Co. (F. H. Beecher, P. S. & W. Co.), 1/2 doz \$10.70, 3/4 doz \$11.25  
Rockford Bit Company, 1/2 doz \$10.70, 3/4 doz \$11.25  
Cook's, Douglas Mfg. Co., 1/2 doz \$10.70, 3/4 doz \$11.25  
Cook's, N. H. Copper Co., 1/2 doz \$10.70, 3/4 doz \$11.25  
Ives' Circular Lip, 1/2 doz \$10.70, 3/4 doz \$11.25  
Patent Solid Head, 1/2 doz \$10.70, 3/4 doz \$11.25  
C. E. Jennings & Co., No. 10, extension, 1/2 doz \$10.70, 3/4 doz \$11.25  
C. E. Jennings & Co., No. 30, 1/2 doz \$10.70, 3/4 doz \$11.25  
C. E. Jennings & Co., Auger Bits, 1/2 doz \$10.70, 3/4 doz \$11.25  
Lewis' Patent Single Twist, 1/2 doz \$10.70, 3/4 doz \$11.25  
Russell Jennings' Augers and Bits, 1/2 doz \$10.70, 3/4 doz \$11.25  
Imitation Jennings Bits, 1/2 doz \$10.70, 3/4 doz \$11.25  
Snell's Jennings Pattern, 1/2 doz \$10.70, 3/4 doz \$11.25  
Snell's Black, 1/2 doz \$10.70, 3/4 doz \$11.25  
Rockford, Jennings' Pattern, 1/2 doz \$10.70, 3/4 doz \$11.25  
Car Bits, 1/2 doz \$10.70, 3/4 doz \$11.25  
Car Bits, P. S. & W. Co., 1/2 doz \$10.70, 3/4 doz \$11.25  
Snell's Car Bits, 1/2 doz \$10.70, 3/4 doz \$11.25  
E. Hommedieu Car Bits, 1/2 doz \$10.70, 3/4 doz \$11.25  
Worthington Pat. Auger Bits, 1/2 doz \$10.70, 3/4 doz \$11.25  
Cincinnati Bell-Hangers' Bits, 1/2 doz \$10.70, 3/4 doz \$11.25

## Bit Stock Drills.

Morse Twist Drills, 1/2 doz \$10.70, 3/4 doz \$11.25  
Standard, 1/2 doz \$10.70, 3/4 doz \$11.25  
Cleveland, 1/2 doz \$10.70, 3/4 doz \$11.25  
Syracuse, for wood (wood list), 1/2 doz \$10.70, 3/4 doz \$11.25  
Williams' or Holt's, for metal, 1/2 doz \$10.70, 3/4 doz \$11.25  
Williams' or Holt's, for wood, 1/2 doz \$10.70, 3/4 doz \$11.25  
Cincinnati, for wood, 1/2 doz \$10.70, 3/4 doz \$11.25  
Cincinnati, for metal, 1/2 doz \$10.70, 3/4 doz \$11.25

## Expansive Bits.

Clark's small, 1/2 doz \$18.00, 3/4 doz \$20.00  
Ives' No. 4, 1/2 doz \$30.00, 3/4 doz \$35.00  
Ewan's, 1/2 doz \$40.00, 3/4 doz \$45.00  
Stearns' No. 1, 1/2 doz \$25.00, 3/4 doz \$30.00  
Stearns' No. 2, 1/2 doz \$25.00, 3/4 doz \$30.00

## Gimlet Bits.

Common, 1/2 doz \$2.75, 3/4 doz \$3.25  
Diamond, 1/2 doz \$1.10, 3/4 doz \$1.25  
Be, 1/2 doz \$2.50, 3/4 doz \$3.00  
Double Cut, Hartwell's, 1/2 doz \$3.00, 3/4 doz \$3.50  
Double Cut, Hartwell's, 1/2 doz \$3.00, 3/4 doz \$3.50  
Double Cut, Hartwell's, 1/2 doz \$3.00, 3/4 doz \$3.50  
Double Cut, Hartwell's, 1/2 doz \$3.00, 3/4 doz \$3.50

## Hollow Augers.

Ives, 1/2 doz \$3.50, 3/4 doz \$4.00  
French, Swift & Co., 1/2 doz \$3.50, 3/4 doz \$4.00  
Douglas, 1/2 doz \$3.50, 3/4 doz \$4.00  
Bonney's Adjustable, 1/2 doz \$4.00, 3/4 doz \$4.50  
Stearns' Expansive, each \$4.50, 1/2 doz \$20.00  
Universal Expansive, each \$4.50, 1/2 doz \$20.00  
Wood's, 1/2 doz \$25.00, 3/4 doz \$30.00  
Cincinnati Adjustable, 1/2 doz \$25.00, 3/4 doz \$30.00  
Cincinnati Standard, 1/2 doz \$25.00, 3/4 doz \$30.00  
Ship Augers and Bits—  
L'Hommiedieu's, 1/2 doz \$15.10, 3/4 doz \$15.50  
Watrous', 1/2 doz \$15.10, 3/4 doz \$15.50  
Snell's, 1/2 doz \$15.10, 3/4 doz \$15.50  
Snell's Ship Auger Pattern Car Bits, 1/2 doz \$15.10, 3/4 doz \$15.50

## Awl Hafts—See Hafts, Awl.

Awls, Brad Sets, &c.—  
Awls, Sewing, Common, 1/2 doz \$1.70, 3/4 doz \$1.80  
Awls, Should, Peg, 1/2 doz \$2.45, 3/4 doz \$2.55  
Awls, Pat. Peg, 1/2 doz \$3.00, 3/4 doz \$3.10  
Awls, Shouldered Brad, 1/2 doz \$2.70, 3/4 doz \$2.80  
Awls, Handled Brad, 1/2 doz \$7.50, 3/4 doz \$7.60  
Awls, Handled Scratch, 1/2 doz \$7.50, 3/4 doz \$7.60  
Awls, Socket Scratch, 1/2 doz \$1.50, 3/4 doz \$1.60

## Awl and Tool Sets—See Sets, Awl and Tool.

Axes—  
First quality, best brands, 1/2 doz \$7.00, 3/4 doz \$7.50  
First qual., other brands, 1/2 doz \$6.75, 3/4 doz \$7.25  
Second quality, 1/2 doz \$6.00, 3/4 doz \$6.50  
Axle Grease—See Grease, Axle.

## Axles.

No. 1, 1/2 doz \$5.00, 3/4 doz \$5.50  
No. 7 to 14, 1/2 doz \$5.50, 3/4 doz \$6.00  
No. 15 to 18, 1/2 doz \$5.50, 3/4 doz \$6.00  
No. 19 to 25, 1/2 doz \$5.50, 3/4 doz \$6.00  
Concord Axle, loose collar, 1/2 doz \$6.00, 3/4 doz \$6.50  
Concord Axle, solid collar, 1/2 doz \$6.00, 3/4 doz \$6.50  
National Tubular Self-Oiling, 1/2 doz \$3.50, 3/4 doz \$4.00

## Bag Holders.—See Holders, Bag.

Balances—  
Spring Balances, 1/2 doz \$0.30, 3/4 doz \$0.35  
Chattillon, 1/2 doz \$0.30, 3/4 doz \$0.35  
Chattillon Straight Balances, 1/2 doz \$0.30, 3/4 doz \$0.35  
Chattillon Circular Balances, 1/2 doz \$0.30, 3/4 doz \$0.35

## Barb Wire.—See Wire, Barb.

## Bars.

Cast Steel, 1/2 doz \$3.50, 3/4 doz \$4.00  
Iron, Steel Points, 1/2 doz \$3.50, 3/4 doz \$4.00

## Basins, Wash.

Standard Fiberware, No. 1, 10 1/2-inch, 1/2 doz \$3.25, 3/4 doz \$3.50  
12-inch, 1/2 doz \$3.25, 3/4 doz \$3.50  
13 1/2-inch, 1/2 doz \$3.25, 3/4 doz \$3.50  
15-inch, 1/2 doz \$3.25, 3/4 doz \$3.50

## Beams, Scale.

Scale Beams, List Jan. 12, '83, 1/2 doz \$50.10, 3/4 doz \$50.50  
Chattillon's No. 1, 1/2 doz \$40.00, 3/4 doz \$40.50  
Chattillon's No. 2, 1/2 doz \$40.00, 3/4 doz \$40.50  
Cruser's, 1/2 doz \$35.00, 3/4 doz \$35.50

## Beaters.

Dover, 1/2 doz \$1.50, 3/4 doz \$1.60  
Duplex (Standard Co.), 1/2 doz \$1.25, 3/4 doz \$1.35  
Rival (Standard Co.), 1/2 doz \$1.00, 3/4 doz \$1.10  
Duplex Extra Heavy (Standard Co.), 1/2 doz \$1.00, 3/4 doz \$1.10

## Bentons.

Bryant's, 1/2 doz \$14.00, 3/4 doz \$14.50  
Double (H. & R. Mfg. Co.), 1/2 doz \$12.00, 3/4 doz \$12.50  
No. 1, 1/2 doz \$15.00, 3/4 doz \$15.50  
Easy (H. & R. Mfg. Co.), 1/2 doz \$12.00, 3/4 doz \$12.50  
Triple (H. & R. Mfg. Co.), 1/2 doz \$16.50, 3/4 doz \$17.00  
Spiral, 1/2 doz \$4.25, 3/4 doz \$4.50  
Improved Acme (H. & R. Mfg. Co.), 1/2 doz \$4.25, 3/4 doz \$4.50

## Boxes, Wagon.

Paine, Diehl & Co.'s, 1/2 doz \$24.00, 3/4 doz \$24.50  
Silver & Co., 1/2 doz \$24.00, 3/4 doz \$24.50

## Cauldrons.

Keystone, P.D. & C., each No. 1, 1/2 doz \$1.00, 3/4 doz \$1.10  
2, 1/2 doz \$1.00, 3/4 doz \$1.10

## Bells.

Common Wrought, 1/2 doz \$10.00, 3/4 doz \$10.50  
Western, 1/2 doz \$10.00, 3/4 doz \$10.50  
Western, Sargent's list, 1/2 doz \$10.00, 3/4 doz \$10.50  
Kentucky, "Star", 1/2 doz \$10.00, 3/4 doz \$10.50  
Kentucky, Sargent's list, 1/2 doz \$10.00, 3/4 doz \$10.50  
Kentucky Durham, 1/2 doz \$10.00, 3/4 doz \$10.50  
Dodge, Genuine Kentucky, 1/2 doz \$10.00, 3/4 doz \$10.50  
Texas Star, 1/2 doz \$10.00, 3/4 doz \$10.50

## Door.

Gong, Abbe's, 1/2 doz \$3.50, 3/4 doz \$4.00  
Gong, Yankee, 1/2 doz \$3.50, 3/4 doz \$4.00  
Gong, Barton's, 1/2 doz \$3.50, 3/4 doz \$4.00  
Crane, Taylor's, 1/2 doz \$3.50, 3/4 doz \$4.00  
Crane, Conner's, 1/2 doz \$3.50, 3/4 doz \$4.00  
Crane, Conner's, 1/2 doz \$3.50, 3/4 doz \$4.00  
Lever, Sargent's, 1/2 doz \$3.50, 3/4 doz \$4.00  
Lever, Taylor's Bronzed or Plated, 1/2 doz \$3.50, 3/4 doz \$4.00  
Lever, Taylor's Japanned, 1/2 doz \$3.50, 3/4 doz \$4.00  
Lever, R. E. M. Co.'s, 1/2 doz \$3.50, 3/4 doz \$4.00  
Pull, Brook's, 1/2 doz \$3.50, 3/4 doz \$4.00  
Pull, Western, 1/2 doz \$3.50, 3/4 doz \$4.00

## Electric.

Wollensak's, 1/2 doz \$3.00, 3/4 doz \$3.50  
Bigelow & Dowse, 1/2 doz \$3.00, 3/4 doz \$3.50  
Taylor's, 1/2 doz \$3.00, 3/4 doz \$3.50

## Hand.

Light Brass, 1/2 doz \$7.50, 3/4 doz \$8.00  
Extra Heavy, 1/2 doz \$8.50, 3/4 doz \$9.00  
White Metal, 1/2 doz \$8.50, 3/4 doz \$9.00  
Silver Chime, 1/2 doz \$3.50, 3/4 doz \$4.00  
Globe Cone's Patent, 1/2 doz \$2.50, 3/4 doz \$3.00

## Miscellaneous.

Call, 1/2 doz \$4.00, 3/4 doz \$4.50  
Farm Bells, 1/2 doz \$3.50, 3/4 doz \$4.00  
Steel Alloy Church and School Bells, 1/2 doz \$4.00, 3/4 doz \$4.50

## Blacksmiths.

Molders, 1/2 doz \$4.00, 3/4 doz \$4.50  
Hand Hammers, 1/2 doz \$4.00, 3/4 doz \$4.50

## Belted, Rubber.

Common Standard, 1/2 doz \$7.00, 3/4 doz \$7.50  
Standard, 1/2 doz \$7.00, 3/4 doz \$7.50  
Extra, 1/2 doz \$8.00, 3/4 doz \$8.50  
N. Y. B. & P. Co., Carbon, 1/2 doz \$5.00, 3/4 doz \$5.50  
N. Y. B. & P. Co., Diamond, 1/2 doz \$5.00, 3/4 doz \$5.50  
N. Y. B. & P. Co., Para, 1/2 doz \$5.00, 3/4 doz \$5.50

## Bench Stops—See Stops, Bench.

Benders and Upsetters, Tire.  
Stoddard's Lightning Tire Upsetters, 1/2 doz \$1.50, 3/4 doz \$1.60  
Detroit Perfected Tire Bender, 1/2 doz \$1.50, 3/4 doz \$1.60

## Bits.

Auger, Gimlet, Bit Stock, Drills, &c., see Augers and Bits.

## Bit Holders—See Holders, Bit.

Blind Adjusters—See Adjusters, Blind.

## Blind Fasteners—See Fasteners, Blind.

Blind Staples—See Staples, Blind.

## Blocks.

Ordinary Tackle, list May 20, 1889, 1/2 doz \$7.00, 3/4 doz \$7.50  
Cleveland Block Co., Mal. Iron, 1/2 doz \$5.00, 3/4 doz \$5.50  
Moore's Novelty, Mal. Iron, 1/2 doz \$5.00, 3/4 doz \$5.50  
Sure Grip Steel Tackle Blocks, 1/2 doz \$5.00, 3/4 doz \$5.50

## Boards, Stove.

Wood Lined "Crystal", 1/2 doz \$5.00, 3/4 doz \$5.50  
"Oxidized", 1/2 doz \$5.00, 3/4 doz \$5.50  
Paper Lined Zinc, 1/2 doz \$5.00, 3/4 doz \$5.50  
"Crystal", 1/2 doz \$5.00, 3/4 doz \$5.50  
Embossed, 1/2 doz \$5.00, 3/4 doz \$5.50  
"New Tacoma", 1/2 doz \$5.00, 3/4 doz \$5.50

## Bolts.

Carriage, Machine, &c.—  
Com. list June 10, '84, 1/2 doz \$7.50, 3/4 doz \$8.00  
Genuine Eagle, Norway, list Oct. '84, 1/2 doz \$8.00, 3/4 doz \$8.50  
Phila. pattern, list Oct. 7, '84, 1/2 doz \$7.50, 3/4 doz \$8.00  
R. B. & W., old list, 1/2 doz \$7.50, 3/4 doz \$8.00  
Machine, list Jan. 1, 1890, 1/2 doz \$7.50, 3/4 doz \$8.00

## Bolt Ends, list Jan. 1, 1890.

1/2 doz \$7.50, 3/4 doz \$8.00

## Door and Shutter.

Cast Iron Barrel, Square, &c., 1/2 doz \$7.00, 3/4 doz \$7.50  
Cast Iron Shutter Bolts, 1/2 doz \$7.00, 3/4 doz \$7.50  
Cast Iron Chain (Sargent's list), 1/2 doz \$5.00, 3/4 doz \$5.50  
Ives' Patent Door Bolts, 1/2 doz \$5.00, 3/4 doz \$5.50  
Wrought Barrel, 1/2 doz \$7.00, 3/4 doz \$7.50  
Wrought Shutter, 1/2 doz \$7.00, 3/4 doz \$7.50  
Wrt Shutter, all Iron, Stanley's, 1/2 doz \$6.00, 3/4 doz \$6.50  
Wrt Shutter, Brass Knob, 1/2 doz \$4.00, 3/4 doz \$4.50  
Wrt Shutter, Sargent's list, 1/2 doz \$6.00, 3/4 doz \$6.50  
Wrt Sunk Flush, Sargent's list, 1/2 doz \$5.00, 3/4 doz \$5.50  
Wrt Sunk Flush, Stanley's list, 1/2 doz \$5.00, 3/4 doz \$5.50  
Wrt B.K. Flush, Com'n, 1/2 doz \$5.00, 3/4 doz \$5.50

## Stove and Flow.

Stove, 1/2 doz \$6.00, 3/4 doz \$6.50  
Flow, 1/2 doz \$6.00, 3/4 doz \$6.50  
R. B. & W., Flow, 1/2 doz \$6.00, 3/4 doz \$6.50

## Tire.

Common, list Feb. 28, '83, 1/2 doz \$6.50, 3/4 doz \$7.00  
Port Chester Bolt and Nut Company, 1/2 doz \$6.50, 3/4 doz \$7.00  
Empire, list Feb. 28, '83, 1/2 doz \$6.50, 3/4 doz \$7.00  
Keystone, Philadel., list Oct. '84, 1/2 doz \$6.50, 3/4 doz \$7.00  
Norway, Philadel., list Oct. '84, 1/2 doz \$6.50, 3/4 doz \$7.00  
American Screw Company, 1/2 doz \$6.50, 3/4 doz \$7.00  
Norway, Phil., list Oct. 16, '84, 1/2 doz \$6.50, 3/4 doz \$7.00  
Eagle, Phil., list Oct. 16, '84, 1/2 doz \$6.50, 3/4 doz \$7.00  
Philadel., list Oct. 16, '84, 1/2 doz \$6.50, 3/4 doz \$7.00  
Ray State, list Feb. 28, '83, 1/2 doz \$6.50, 3/4 doz \$7.00  
R. B. & W., Philadel., list Oct. 16, '84, 1/2 doz \$6.50, 3/4 doz \$7.00

## Horers, Tap.

Common and Kind, 1/2 doz \$30.10, 3/4 doz \$30.50  
Ives' Tap Borers, 1/2 doz \$30.10, 3/4 doz \$30.50  
Enterprise Mfg. Co., 1/2 doz \$30.10, 3/4 doz \$30.50  
Clark's, 1/2 doz \$30.10, 3/4 doz \$30.50

## Borax.

1/2 doz \$9.00, 3/4 doz \$9.50

## Boring Machines—See Machines, Boring.

## Bow Pins—See Pins, Bow.

## Boxes, Wagon.

Per b, 1/2 doz \$3.50, 3/4 doz \$4.00

## Braces.

American Bit Brace Co., 1/2 doz \$6.00, 3/4 doz \$6.50  
Nos. 11, 21, 24, 27, 1/2 doz \$7.00, 3/4 doz \$7.50  
Nos. 22, 23, 26, 1/2 doz \$6.00, 3/4 doz \$6.50  
Nos. 13, 26, 36, 37, 1/2 doz \$7.00, 3/4 doz \$7.50  
Ball Braces, net, 1/2 doz \$1.12, 3/4 doz \$1.25

## Amidons.

Barker's Imp'd Plain, 1/2 doz \$7.50, 3/4 doz \$8.00  
Barker's Imp. Nickle, 1/2 doz \$7.50, 3/4 doz \$8.00  
Ratchet, 1/2 doz \$7.50, 3/4 doz \$8.00  
Eclipse Ratchet, 1/2 doz \$7.50, 3/4 doz \$8.00  
Globe Jawed, 1/2 doz \$7.50, 3/4 doz \$8.00  
Corner Brace, 1/2 doz \$7.50, 3/4 doz \$8.00  
Universal, 8 in., 1/2 doz \$10.00, 3/4 doz \$10.50  
Buffalo Ball, 1/2 doz \$1.10, 3/4 doz \$1.25

## Barber's.

Nos. 10 to 16, 1/2 doz \$5.00, 3/4 doz \$5.50  
Nos. 30 to 33, 1/2 doz \$5.00, 3/4 doz \$5.50  
Nos. 40 to 63, 1/2 doz \$5.00, 3/4 doz \$5.50

## Saxton's.

Barker's Imp. Polished, 1/2 doz \$7.50, 3/4 doz \$8.00  
Barker's Imp. Nickle, 1/2 doz \$7.50, 3/4 doz \$8.00  
Ratchet, Polished, 1/2 doz \$7.50, 3/4 doz \$8.00  
Ratchet, Nickle, 1/2 doz \$7.50, 3/4 doz \$8.00  
Buffalo Ball, net, 1/2 doz \$1.10, 3/4 doz \$1.25

## Bartholomew's.

Nos. 17, 118, 119, 1/2 doz \$7.00, 3/4 doz \$7.50  
Common Ball, American, 1/2 doz \$1.00, 3/4 doz \$1.10  
Fray's Genuine Spotted's, 1/2 doz \$5.00, 3/4 doz \$5.50  
Fray's No. 70 to 120, 81 to 123, 207 to 414, 1/2 doz \$5.00, 3/4 doz \$5.50

## Ives' New Haven Novelty.

1/2 doz \$7.00, 3/4 doz \$7.50  
New Haven Ratchet, 1/2 doz \$5.00, 3/4 doz \$5.50  
Barber Ratchet, 1/2 doz \$5.00, 3/4 doz \$5.50  
Barbers, 1/2 doz \$5.00, 3/4 doz \$5.50  
Barker's Imp. Nickle, 1/2 doz \$5.00, 3/4 doz \$5.50  
Osgood's Ratchet, 1/2 doz \$5.00, 3/4 doz \$5.50  
P. S. & W. Co., Peck's Patent, 1/2 doz \$5.00, 3/4 doz \$5.50

## Brackets.

Shelf plain, Sargent list, 1/2 doz \$5.00, 3/4 doz \$5.50  
Shelf, fancy, Sargent's list, 1/2 doz \$5.00, 3/4 doz \$5.50

## Reading, plain.

1/2 doz \$5.00, 3/4 doz \$5.50  
Reading, Rosette, 1/2 doz \$5.00, 3/4 doz \$5.50

## Bright Wire Goods—See Wire.

## Broilers.

Hens' Self-Inch, 1/2 doz \$9.00, 3/4 doz \$9.50  
Hens' Self-Inch, 1/2 doz \$9.00, 3/4 doz \$9.50  
New Haven, 1/2 doz \$9.00, 3/4 doz \$9.50  
Wire Goods Co., 1/2 doz \$9.00, 3/4 doz \$9.50

## Buckets, Well.

Galvanized, 1/2 doz \$4.25, 3/4 doz \$4.50  
Hill's, 1/2 doz \$4.25, 3/4 doz \$4.50  
Iron Clad, 1/2 doz \$4.25, 3/4 doz \$4.50  
Helwig's Flat Iron Band, 1/2 doz \$4.25, 3/4 doz \$4.50



**Clamps—**

R. I. Tool Co.'s Wrought Iron.....25¢  
Adjustable, Cincinnati.....15¢10¢  
Adjustable, Cincinnati.....15¢10¢  
Adjustable, Stearns'.....30¢30¢10¢  
Stearns' Adjustable Cabinet and Corner.....30¢30¢10¢  
Cabinet, Sargent's.....60¢210¢  
Carriage Makers', Sargent's.....70¢10¢  
Carriage Makers', P. S. & W. Co., 408-105  
Eberhard Mfg. Co., 408-55-408-105  
Farrell, C. H. Besly & Co., 25¢  
Warner's.....40¢10¢40¢10¢25¢  
Saw Clamps, see Vises, Saw Filers.  
Carpenters', Cincinnati.....25¢10¢

**Cleavers.**

**Butchers'.**  
Bradley's.....25¢30¢  
L. & J. White.....20¢5¢  
Beatty's.....40¢40¢25¢  
New Haven Edge Tool Co.'s.....40¢  
F. S. & W.....33¢45¢33¢45¢10¢  
Foster Bros., Saw Filers.....30¢  
Schulte, Lohoff & Co.....40¢40¢25¢

**Clips—**

Norway, Axle, 1/4 & 5-16.....55¢25¢5¢  
2nd grade Norway Axle, 1/4 & 5-16.....55¢25¢  
Superior Axle Clips.....60¢25¢70¢  
Norway Spring Bar Clips, 5-16.....60¢25¢  
Wrought-Iron Felice Clips.....5¢, 5¢, 5¢  
Steel Felice Clips.....5¢, 5¢, 5¢  
Baker Axle Clips.....25¢

**Cloth and Netting, Wire—See Wire, &c.**

**Cocks, Brass.**

Hardware list.....50¢25¢

**Coffee Mills—See Mills, Coffee**

**Collars, Dog, &c.**

Madford Fancy Goods Co.....40¢10¢  
Embossed, Gilt, Pope & Steven's list.....30¢10¢  
Leather, Pope & Steven's list.....40¢  
Brass, Pope & Steven's list.....40¢  
Chapman Mfg. Company.....50¢10¢60¢

**Combs, Curry.**

Fitch's.....50¢10¢50¢10¢10¢  
Rubber, per doz \$10.00.....20¢  
Perfect.....50¢  
Kellogg's.....50¢10¢  
Sweet & Clark's.....50¢10¢

**Compasses, Dividers, &c.—**

Compases, Calipers, Dividers, 70¢70¢10¢  
Bemis & Call Co.'s.....60¢25¢  
Dividers.....50¢25¢  
Compases & Calipers.....50¢25¢  
Wing and Inside or Outside.....50¢25¢  
Double.....60¢  
(Call's Pat. Inside).....30¢  
Excelsior.....50¢  
J. Stevens & Co.'s.....35¢10¢  
Stearns'.....35¢10¢  
Spring Calipers and Dividers.....25¢  
Lock Calipers and Dividers.....25¢  
Combination Dividers.....25¢

**Coopers' Tools—See Tools, Coopers'.**

**Cord—**

**Sash.**

Patent, good quality.....5¢, 12¢, 12¢  
White Cotton Braided, Fair, 5/8, 24¢25¢  
Common Russia Sash.....5¢, 12¢, 12¢  
Patent Russia Sash.....5¢, 12¢, 12¢  
Cable Laid Italian Sash.....5¢, 24¢25¢  
India Cable Laid Sash.....5¢, 12¢  
Silver Laid.....25¢  
A Quality, White, 50¢.....25¢  
A Quality, Drab, 50¢.....25¢  
B Quality, White, 30¢.....10¢  
B Quality, Drab, 35¢.....10¢  
Sylvan Spring Extra Braided White, 3/4  
Sylvan Spring Extra Braided, Drab, 3/4  
Semper Idem Braided, White.....30¢  
Egyptian, India Hemp, Braided.....30¢  
Massachusetts, White.....20¢  
Samson.....20¢

Braided, White Cotton, 50¢.....30¢30¢25¢  
Braided, Drab Cotton, 50¢.....30¢30¢25¢  
Braided, Italian Hemp, 50¢.....30¢30¢25¢  
Braided, Laid, 50¢.....30¢30¢25¢  
Tate's Cotton Braided, White.....5¢, 25¢

**Wire Picture.**

Braided or Twisted.....75¢10¢

**Corkscrews—See Screws, Cork.**

**Corn Knives and Cutters—See Knives, Corn.**

**Crackers, Nut—**

Table (H. & B. Mfg. Co.).....40¢  
Blake's Pattern.....5¢ doz \$2.00, 10¢  
Turner & Seymour Mfg. Co.....50¢

**Cradles—**

Grain.....50¢25¢50¢10¢25¢

**Crays.**

White Crays, 5¢ gross.....10¢  
D. M. Stewart Mfg. Co., Metal Work.....25¢  
D. M. Stewart Mfg. Co., Rolling Mill.....25¢  
See also Chalk.

**Crow Bars—See Bars, Crow.**

**Curry Combs—See Combs, Curry.**

**Curtain Pins—See Pins, Curtain.**

**Utters—**

**Meat.**

Dixon's 5¢ doz.....40¢25¢  
Nos. 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250 251 252 253 254 255 256 257 258 259 260 261 262 263 264 265 266 267 268 269 270 271 272 273 274 275 276 277 278 279 280 281 282 283 284 285 286 287 288 289 290 291 292 293 294 295 296 297 298 299 300 301 302 303 304 305 306 307 308 309 310 311 312 313 314 315 316 317 318 319 320 321 322 323 324 325 326 327 328 329 330 331 332 333 334 335 336 337 338 339 340 341 342 343 344 345 346 347 348 349 350 351 352 353 354 355 356 357 358 359 360 361 362 363 364 365 366 367 368 369 370 371 372 373 374 375 376 377 378 379 380 381 382 383 384 385 386 387 388 389 390 391 392 393 394 395 396 397 398 399 400 401 402 403 404 405 406 407 408 409 410 411 412 413 414 415 416 417 418 419 420 421 422 423 424 425 426 427 428 429 430 431 432 433 434 435 436 437 438 439 440 441 442 443 444 445 446 447 448 449 450 451 452 453 454 455 456 457 458 459 460 461 462 463 464 465 466 467 468 469 470 471 472 473 474 475 476 477 478 479 480 481 482 483 484 485 486 487 488 489 490 491 492 493 494 495 496 497 498 499 500 501 502 503 504 505 506 507 508 509 510 511 512 513 514 515 516 517 518 519 520 521 522 523 524 525 526 527 528 529 530 531 532 533 534 535 536 537 538 539 540 541 542 543 544 545 546 547 548 549 550 551 552 553 554 555 556 557 558 559 560 561 562 563 564 565 566 567 568 569 570 571 572 573 574 575 576 577 578 579 580 581 582 583 584 585 586 587 588 589 590 591 592 593 594 595 596 597 598 599 600 601 602 603 604 605 606 607 608 609 610 611 612 613 614 615 616 617 618 619 620 621 622 623 624 625 626 627 628 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658 659 660 661 662 663 664 665 666 667 668 669 670 671 672 673 674 675 676 677 678 679 680 681 682 683 684 685 686 687 688 689 690 691 692 693 694 695 696 697 698 699 700 701 702 703 704 705 706 707 708 709 710 711 712 713 714 715 716 717 718 719 720 721 722 723 724 725 726 727 728 729 730 731 732 733 734 735 736 737 738 739 740 741 742 743 744 745 746 747 748 749 750 751 752 753 754 755 756 757 758 759 760 761 762 763 764 765 766 767 768 769 770 771 772 773 774 775 776 777 778 779 780 781 782 783 784 785 786 787 788 789 790 791 792 793 794 795 796 797 798 799 800 801 802 803 804 805 806 807 808 809 810 811 812 813 814 815 816 817 818 819 820 821 822 823 824 825 826 827 828 829 830 831 832 833 834 835 836 837 838 839 840 841 842 843 844 845 846 847 848 849 850 851 852 853 854 855 856 857 858 859 860 861 862 863 864 865 866 867 868 869 870 871 872 873 874 875 876 877 878 879 880 881 882 883 884 885 886 887 888 889 890 891 892 893 894 895 896 897 898 899 900 901 902 903 904 905 906 907 908 909 910 911 912 913 914 915 916 917 918 919 920 921 922 923 924 925 926 927 928 929 930 931 932 933 934 935 936 937 938 939 940 941 942 943 944 945 946 947 948 949 950 951 952 953 954 955 956 957 958 959 960 961 962 963 964 965 966 967 968 969 970 971 972 973 974 975 976 977 978 979 980 981 982 983 984 985 986 987 988 989 990 991 992 993 994 995 996 997 998 999 1000

Woodruff's 5¢ doz.....40¢25¢  
Nos. 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250 251 252 253 254 255 256 257 258 259 260 261 262 263 264 265 266 267 268 269 270 271 272 273 274 275 276 277 278 279 280 281 282 283 284 285 286 287 288 289 290 291 292 293 294 295 296 297 298 299 300 301 302 303 304 305 306 307 308 309 310 311 312 313 314 315 316 317 318 319 320 321 322 323 324 325 326 327 328 329 330 331 332 333 334 335 336 337 338 339 340 341 342 343 344 345 346 347 348 349 350 351 352 353 354 355 356 357 358 359 360 361 362 363 364 365 366 367 368 369 370 371 372 373 374 375 376 377 378 379 380 381 382 383 384 385 386 387 388 389 390 391 392 393 394 395 396 397 398 399 400 401 402 403 404 405 406 407 408 409 410 411 412 413 414 415 416 417 418 419 420 421 422 423 424 425 426 427 428 429 430 431 432 433 434 435 436 437 438 439 440 441 442 443 444 445 446 447 448 449 450 451 452 453 454 455 456 457 458 459 460 461 462 463 464 465 466 467 468 469 470 471 472 473 474 475 476 477 478 479 480 481 482 483 484 485 486 487 488 489 490 491 492 493 494 495 496 497 498 499 500 501 502 503 504 505 506 507 508 509 510 511 512 513 514 515 516 517 518 519 520 521 522 523 524 525 526 527 528 529 530 531 532 533 534 535 536 537 538 539 540 541 542 543 544 545 546 547 548 549 550 551 552 553 554 555 556 557 558 559 560 561 562 563 564 565 566 567 568 569 570 571 572 573 574 575 576 577 578 579 580 581 582 583 584 585 586 587 588 589 590 591 592 593 594 595 596 597 598 599 600 601 602 603 604 605 606 607 608 609 610 611 612 613 614 615 616 617 618 619 620 621 622 623 624 625 626 627 628 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658 659 660 661 662 663 664 665 666 667 668 669 670 671 672 673 674 675 676 677 678 679 680 681 682 683 684 685 686 687 688 689 690 691 692 693 694 695 696 697 698 699 700 701 702 703 704 705 706 707 708 709 710 711 712 713 714 715 716 717 718 719 720 721 722 723 724 725 726 727 728 729 730 731 732 733 734 735 736 737 738 739 740 741 742 743 744 745 746 747 748 749 750 751 752 753 754 755 756 757 758 759 760 761 762 763 764 765 766 767 768 769 770 771 772 773 774 775 776 777 778 779 780 781 782 783 784 785 786 787 788 789 790 791 792 793 794 795 796 797 798 799 800 801 802 803 804 805 806 807 808 809 810 811 812 813 814 815 816 817 818 819 820 821 822 823 824 825 826 827 828 829 830 831 832 833 834 835 836 837 838 839 840 841 842 843 844 845 846 847 848 849 850 851 852 853 854 855 856 857 858 859 860 861 862 863 864 865 866 867 868 869 870 871 872 873 874 875 876 877 878 879 880 881 882 883 884 885 886 887 888 889 890 891 892 893 894 895 896 897 898 899 900 901 902 903 904 905 906 907 908 909 910 911 912 913 914 915 916 917 918 919 920 921 922 923 924 925 926 927 928 929 930 931 932 933 934 935 936 937 938 939 940 941 942 943 944 945 946 947 948 949 950 951 952 953 954 955 956 957 958 959 960 961 962 963 964 965 966 967 968 969 970 971 972 973 974 975 976 977 978 979 980 981 982 983 984 985 986 987 988 989 990 991 992 993 994 995 996 997 998 999 1000

Hales Pattern 5¢ doz.....15¢0¢15¢  
Nos. 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250 251 252 253 254 255 256 257 258 259 260 261 262 263 264 265 266 267 268 269 270 271 272 273 274 275 276 277 278 279 280 281 282 283 284 285 286 287 288 289 290 291 292 293 294 295 296 297 298 299 300 301 302 303 304 305 306 307 308 309 310 311 312 313 314 315 316 317 318 319 320 321 322 323 324 325 326 327 328 329 330 331 332 333 334 335 336 337 338 339 340 341 342 343 344 345 346 347 348 349 350 351 352 353 354 355 356 357 358 359 360 361 362 363 364 365 366 367 368 369 370 371 372 373 374 375 376 377 378 379 380 381 382 383 384

**Hangers—**

Barn Door, old patterns.....	60¢10¢10¢70¢
Barn Door, New England.....	60¢10¢10¢70¢
Samson Steel Anti-Friction.....	55¢
Orleans Steel.....	55¢
Hamilton Wrought Wood Track.....	55¢
U. S. Wood Track.....	55¢
Champion.....	60¢10¢
Rider and Wooster, Medina Mfg. Co. 2.....	70¢
Climax Anti-Friction.....	55¢
Climax Anti-Friction for Wood Track.....	55¢
Zentith for Wood Track.....	55¢
Reed's Steel Arm.....	50¢
Challenge, Barn Door.....	50¢
Sterling.....	50¢50¢10¢
Victor, No. 1, \$15.00; No. 2, \$18.50, No. 3, \$18.00.....	50¢25¢
Cheritree.....	50¢10¢
Rider's.....	50¢10¢60¢
Boss.....	60¢10¢
Best Anti-Friction.....	60¢10¢
Duplex (Wood Track).....	60¢10¢
Terry's Pat., 5 dos pr.....	\$10.00; 5 in. \$12.00.....
Terry's Steel Anti-Friction Leader.....	50¢10¢
Terry's Steel Anti-Friction Ideal.....	50¢10¢
Cronk's Patent, Steel Covered.....	50¢55¢
Wood Track Iron Clad, 7 ft. 10 in.....	50¢
Garrier Steel Anti-Friction.....	50¢10¢
Architect, 5 set \$6.00.....	20¢
Elipse.....	20¢10¢
Felix, 5 set \$4.50.....	20¢
Richards.....	30¢30¢10¢
Lane's Standard.....	50¢50¢10¢
Lane's New Standard.....	50¢50¢55¢
Lane's Parlor.....	40¢
Ball Bearing Door Hanger.....	30¢10¢25¢10¢
Warner's Pat.....	20¢10¢20¢10¢10¢
Stearns' Anti-Friction.....	30¢10¢20¢10¢10¢
Stearns' Challenge.....	25¢10¢25¢10¢10¢
Faulkner.....	40¢40¢55¢
American, 5 set \$6.00.....	30¢10¢
Rider & Wooster, No. 1, 2, 3, 4, 5.....	40¢
Paragon, Nos. 1, 2 and 3.....	40¢10¢
Cincinnati.....	25¢10¢
Paragon, Nos. 5, 5 1/2, 7 and 8.....	20¢10¢
Crescent.....	60¢60¢10¢
Nickel Cast Iron.....	60¢
Nickel Malleable Iron and Steel.....	60¢
Scranton Anti-Friction Single Strap.....	35¢55¢
Wild West, 4 in. Wheel, \$15.00; 5 in. Wheel, \$21.00.....	45¢
Star.....	40¢10¢40¢10¢55¢
May.....	50¢55¢50¢10¢
Barry.....	40¢10¢
Interstate.....	50¢
Magie.....	45¢

**Harness Snaps—See Snaps.****Hatchets—**

American Axe and Tool Co.	
Blood's.....	
Hunt's.....	
Hurd's.....	
Mann's.....	
Peck's.....	
Underhill's.....	40 & 10
Buffalo Hammer Co.....	
Fayette R. Plumb.....	50¢25¢
C. Hammond & Son.....	
Kelly's.....	
Sargent & Co.....	
P. S. & W. Co.....	
Ten Eyck Edge Tool Co.....	
Collins.....	10¢
Schulte, Lohoff & Co.....	50¢50¢55¢

**Hay and Straw Knives—See Knives.****Hinges—**

<b>Blind Hinges—</b>	
Parker.....	75¢25¢
Palmer.....	50¢55¢10¢
Seymour.....	70¢25¢
Ruffer.....	50¢
Clark's, Nos. 1, 3, 5, 40 and 50.....	75¢10¢55¢25¢
Clark's Mortise Gravity.....	50¢
Sargent's Nos. 1, 3, 5, 11.....	75¢10¢55¢10¢55¢
Sargent's No. 12.....	77¢10¢10¢
Reading's Gravity.....	75¢10¢75¢10¢55¢
Shepard's.....	
Notelless.....	75¢10¢
Niagara.....	80¢
Buffalo.....	80¢
Clark's Genuine Pattern.....	80¢
O. S., Lull & Porter.....	75¢10¢
Acme, Lull & Porter.....	75¢
Queen City Reversible.....	70¢10¢55¢75¢
Clark's Lull & Porter, Nos. 0, 1, 1 1/2, 2, 3, 4.....	75¢10¢25¢
North's Automatic Blind Pattern.....	75¢10¢
2 for Wood, \$9.00; No. 3, for Brick, \$11.50.....	10¢
<b>Gate Hinges—</b>	
Western.....	5 dos \$4.40, 60¢
N. E.....	5 dos \$7.00, 60¢
K. E. Reversible.....	5 dos \$5.20, 55¢10¢
Clark's, Nos. 1, 2, 3.....	60¢10¢55¢
N. Y. State.....	5 dos \$5.00, 55¢10¢
Automatic.....	5 dos \$12.50, 50¢
Common Sense.....	5 dos pair \$4.50, 50¢
Seymour's.....	45¢10¢
Shepard's.....	60¢10¢55¢
Reed's Latch and Hinges.....	5 dos \$12.00, 50¢
<b>Spring Hinges—</b>	
Geer's Spring and Blank Butts.....	40¢
Union Spring Hinge Co.'s list, March 1891.....	
Acme.....	30¢
J. S.....	25¢10¢
Empire and Crown.....	30¢
Hero and Monarch.....	55¢
American, Gem, and Star.....	30¢
Oxford.....	\$15.00
Barker's Double Acting.....	25¢
Union Mfg. Co.....	25¢
Bommer's.....	30¢
Buckman's.....	15¢20¢
Chicago.....	30¢
Wiles.....	30¢
Devore's.....	40¢
Rox.....	40¢
Reliable.....	60¢
Champion.....	60¢
Bardsley's Patent.....	40¢
Stearns.....	50¢10¢
Niagara, Holdback pattern, per gross.....	\$14.00
<b>Wrought Iron Hinges</b> List February 14, 1891.....	50¢10¢
Strap and T.....	50¢10¢

Corrugated Strap and T.....	50 & 10¢
Screw Hook and Key.....	6 to 12 in., 5¢; 14 to 20 in., 7¢; 22 to 36 in., 9¢
Screw Hook and Eye.....	5 in., 5¢; 6 in., 7¢; 8 in., 9¢; 10 in., 11¢; 12 in., 13¢; over 12 in., 15¢
Rolled Blind Hinges, Nos. 32 and 34.....	50¢10¢
Rolled Blind Hinges, Nos. 232 and 234.....	55¢10¢
Rolled Plate.....	70¢10¢
Rolled Raised.....	70¢10¢
Plate Hinges (8, 10 & 12 in., 5¢; over 12 in., 7¢).....	50¢

**Hoops—**

<b>Eye—</b>	
D. & H. Scovill.....	30¢
Lane's Crescent Pattern.....	45¢55¢
Lane's Razor Blade, Scovill Pattern.....	30¢
Maynard, S. & O. Pat.....	45¢55¢
Sandusky Tool Co., S. & O. Pat.....	50¢10¢55¢
Am. Axe and Tool Co., S. & O. Pat.....	60¢
Chattanooga Tool Co., S. & O. Pat.....	50¢10¢
Grub.....	50¢10¢
<b>Handled—</b>	
Garden, Mortar, &c.....	70¢
Planter's, Cotton &c.....	70¢
Warren Hoe.....	30¢
Magie.....	5 dos \$4.00

**Hog Rings and Ringers—See Rings and Ringers.****Hoisting Apparatus—See Machines, Hoisting.****Hollow-Ware—See Ware, Hollow.****Holders.**

<b>Bag.</b>	
Spangle's Pat.....	5 dos \$18.....
<b>But.</b>	
Extension.....	
Barber's, 5 dos \$15.00.....	40¢40¢10¢
Ives, 5 dos \$20.00.....	60¢55¢60¢10¢
Diagonal.....	5 dos \$24.00, 40¢
Angular.....	5 dos \$24.00, 40¢55¢
<b>File and Tool—</b>	
Bals Pat.....	5 dos \$4.00; 25¢
Planter's, Cotton &c.....	30¢
Dick's Tool Holder.....	30¢

**Hooks—**

<b>Cast Iron—</b>	
Bird Cage, Sargent's list.....	60¢10¢10¢
Bird Cage, Reading.....	60¢10¢10¢
Clothes Line, Sargent's list.....	60¢10¢10¢
Clothes Line, Reading.....	60¢10¢10¢
Celling Sargent's list.....	55¢10¢10¢
Harness, Reading list.....	55¢10¢55¢10¢10¢
Coat and Hat, Sargent's list.....	55¢10¢60¢10¢
Coat and Hat, Reading.....	50¢10¢50¢10¢10¢
<b>Wrought Iron—</b>	
Cotton.....	5 dos \$1.25
Cotton Pat. (N. Y. Mallet & Handle Wks.).....	30¢
Tassel and Picture (T. & S. Mfg. Co.).....	50¢
Wrought Staples, Hooks, &c.....	See Wrought Goods.
<b>Wire—</b>	
Wire Coat and Hat, Gem, list April, 1888.....	60¢
Wire Coat and Hat, Miles, list April, 1888.....	60¢
Indestructible Coat and Hat.....	55¢
Wire Coat and Hat, Standard.....	60¢
Handy Hat and Coat.....	50¢10¢
Steady Ceiling Hooks.....	50¢10¢
Belt.....	80¢80¢10¢
Atlas, Coat and Hat.....	60¢
Bright Wire Goods, see Wire.....	

**Miscellaneous.**

Grass, No. 2, \$2.00; No. 3, \$2.25; No. 4, \$2.50.....	
Noll's Grass.....	5 dos \$2.25
Bush.....	55¢60¢
Whiffletree—Patent.....	55¢
Hooks and Eyes—Malleable Iron.....	70¢70¢10¢
Hooks and Eyes—Brass.....	50¢10¢10¢
Fish Hooks, American.....	50¢
Bench Hooks.....	See Bench Stops.
<b>Horse Nails—See Nails, Horse.</b>	
<b>Horse Shoes—See Shoes, Horse.</b>	
<b>Hose, Rubber—</b>	
Competition.....	75¢75¢55¢
Standard.....	60¢10¢55¢60¢10¢10¢
Extra.....	40¢10¢60¢
N. Y. B. & P. Co., Para.....	25¢55¢
N. Y. B. & P. Co., Extra.....	40¢40¢55¢
N. Y. B. & P. Co., Dundee.....	60¢10¢

**Huskers.**

Blair's Adjustable.....	5 dos \$5.00
Blair's Adjustable Clipper.....	5 gr 7.00
Hubbard's Solid Steel.....	5 gr 4.50
<b>Indurated Fiber-Ware—See Ware, Indurated Fiber.</b>	
<b>Iron.</b>	
From 4 to 10, at factory.....	50¢100¢
Self-Heating.....	5 dos \$9.00 net
Self-Heating, Tailors.....	5 dos \$18.00 net
Mrs. Pott's Iron.....	60¢60¢10¢
Enterprise Star Iron.....	60¢60¢10¢
XX Cold Water and Iron.....	60¢60¢10¢
Ideal Irons new list.....	50¢10¢50¢
Salamanca Iron.....	25¢
R. B. Sad Irons.....	3 dos \$3.50
Combined Fluter and Sad Iron.....	5 dos
15.00.....	
Fox Reversible, Self-Fluter.....	5 dos \$24.00
Chinese Laundry (N. E. Butt Co.).....	8 1/2, 15¢
New England.....	15¢
Mahony's Troy Pol. Irons.....	25¢
Sensible, list Jan. 91.....	50¢10¢55¢
Sensible Tailor's Irons.....	53 1/2¢
National Sewing.....	30¢
<b>Soldering—</b>	
Soldering Coppers.....	5 dos \$2.25
Cover's Adjustable, list Jan. 1, 1888.....	35¢25¢
<b>Iron, Pinking, per dos., 65¢.</b>	
<b>Jack Screws—See Screws.</b>	
<b>Jacks, Wagon.</b>	
Daisy.....	10¢
Victor.....	10¢
Lockport.....	40¢

**Kettles—**

Brass, Spun, Plain, list Jan. 1, '91.....	5¢55¢
Brass, Spun, Pld. W.M. list Jan. 1, '91.....	20¢
Enameled and Tea—See Hollow Ware.	

**Keys—**

Lock Ass'n list Dec. 30, 1888.....	50¢10¢
Eagle, Cabinet, &c.....	33 1/2¢25¢
Hotchkiss' Brass Blanks.....	40¢
Hotchkiss, Copper and Tinned.....	40¢
Hotchkiss' Pad, and Cab.....	35¢
Hatchet Bed Keys.....	5 dos \$4.00, 15¢
Wollensak Tinned.....	50¢10¢

**Knife Sharpeners—See Sharpeners, Knife.****Knives.**

<b>Butcher, Shoe, &amp;c—</b>	
Wilson's Butcher Knives, list Dec. 8, 1890.....	25¢
Ames' Butcher Knives.....	25¢
Foster Bros' Butcher, &c.....	40¢
Jordan's A.A.A. Butchers', list.....	net
Nichols' Butcher Knives.....	40¢10¢
W. W. Wilson, Butcher, 6 in., \$2.00; 7 in., \$2.70; 8 in., \$3.50, &c.....	20¢25¢
Ames' Shoe Knives.....	20¢25¢
Ames' Bread Knives.....	5 dos \$1.50, 15¢20¢
Moran's Shoe and Bread.....	30¢
Hay and Straw.....	See Hay Knives.
Table and Pocket.....	See Cutlery.
Corn, Auburn Mfg. Co. Western Pat.....	\$3.50
<b>Cor.</b>	
Bradley's.....	10¢
Wadsworth's.....	25¢
<b>Dressing—</b>	
P. S. & W.....	75¢75¢10¢
M. S.....	
New Haven.....	60¢10¢60¢10¢55¢
Merrill.....	60¢10¢60¢10¢55¢
Douglas.....	75¢75¢25¢
Watrous.....	15¢10¢25¢
L. J. White.....	20¢25¢
Bradley's.....	35¢
Adjustable Handle.....	25¢33 1/2¢
Wilkinson's Folding.....	25¢25¢55¢
<b>Hay and Straw—</b>	
Lightning, from jobbers.....	\$8.00 & \$9.00
Wadsworth's.....	40¢7 1/2¢40¢10¢
Carter's Needle.....	5 dos \$11.00 & \$11.50
Head's.....	5 dos \$13.00 & \$13.50
Auburn Hay, Com. and Spear Point.....	50¢
Auburn, Straw.....	40¢
Noll's Hay.....	5 dos \$7.00 & \$8.00
<b>Mining.</b>	
Am. (3d quality), 5 gr., 1 blade, \$7; 2 blades, \$12; 3 blades, \$18.....	net
Smith's.....	5 dos, single, \$2.50; Double, \$3
Knapp & Cowles.....	50¢10¢60¢
Buffalo Adjustable.....	5 dos \$3.00, 25¢
Buffalo Double Adjustable.....	5 dos \$3.00, 25¢

**Knobs.**

Door Mineral.....	60¢65¢
Door Por. Jap'd.....	70¢75¢
Door Por. Nickel.....	\$3.00 & \$3.25
Door Por. Plated, Nickel.....	\$2.00 & \$2.25
Drawer, Porcelain.....	60¢10¢60¢10¢10¢
Hemlock Door Knobs.....	40¢10¢50¢
Carter's Towne Wood, list Dec. 1888.....	40¢
Furniture, Plain.....	75¢ gro 10¢10¢
Furniture, Wood Screws.....	25¢10¢
Base, Rubber Tip.....	70¢10¢55¢
Picture, Judd's.....	60¢10¢10¢70¢
Picture, Sargent's.....	70¢10¢
Picture, Hemlock.....	35¢55¢
Shutter, Porcelain.....	55¢10¢
Carriage.....	5 gr 80¢, 60¢10¢
Bardsley's Wood Door, Shutter, &c.....	40¢

**Ladies.**

Melting, Sargent's.....	55¢10¢
Melting, Reading.....	55¢10¢
Melting, Monroe's Pat.....	5 dos \$4.00, 40¢
Melting, P. S. & W.....	35¢10¢40¢
Melting, Warner's.....	30¢

**Lanterns.**

<b>Tubular.</b>	
Plain with Guards.....	5 dos \$3.75 & \$4.00
Lift Wire, with Guards.....	\$4.00 & \$4.25
Squad, Plain, with Guards.....	\$3.75 & \$4.00
Sq. Lift Wire, with Guards.....	\$4.50
<b>Police Lanterns (including packages).</b>	
2 1/2-inch Bull's-eye Police regular.....	5 dos \$3.50
3-inch Bull's-eye Police regular.....	5 dos \$3.50
2 1/2-inch Bull's-eye Police flash light.....	5 dos \$4.00
3-inch Bull's-eye Police flash light.....	5 dos \$4.50

**Lawn Mowers—See Mowers, Lawn.****Leaders, Cattle.**

Hudson, Beckley & Co.'s.....	70¢
Sargent's.....	60¢10¢
Hotchkiss.....	30¢
Peck, Stow & W. Co.....	60¢10¢

**Lemon Squeezers—See Squeezers, Lemon.****Lifters, Transom.**

Wollensak's.....	
Class 3 and 4, Bronzed Iron.....	50¢
Class 3 and 4, Bronze Metal.....	25¢
Class 3 and 4, Brass.....	35¢
Skylight Lifters.....	35¢
Crown, Eagle and Shield.....	50¢
Transom, Real Bronze or Nickel Plate.....	50¢10¢10¢25¢
Excelstor.....	50¢10¢
Shaw's.....	50¢10¢
Payson's.....	
Universal.....	60¢
Solid Cap.....	60¢
Imperial.....	50¢10¢

**Linen.**

Cotton and Linen Fish, Draper's.....	50¢
Draper's and Tate's Chalk.....	60¢
Draper's Mason's Linen, 84 ft., No. 1, \$1.25; No. 2, \$1.75; No. 3, \$2.35; No. 4, \$2.75; No. 5, \$3.25.....	55¢
Cotton Chalk.....	55¢
Samson Cotton, No. 4, \$2; No. 4 1/2, \$2.50; No. 5, \$3.....	10¢
Silver Lake, Braided, No. 0, \$6.00; No. 1, \$4.50; No. 2, \$7.00; No. 3, \$7.50.....	25¢
gro.....	25¢
Mason's Linen, No. 3 1/2, \$1.50; No. 4, \$2.00; No. 4 1/2, \$2.50.....	

Mason's Colored Cotton.....	45¢
Wire Clothes.....	12 1/2 1/2 3/4 3/4
100 ft.....	\$4.00 \$3.50 \$3.00
Ventilator Cord, Samson Braided, White or Drab Cotton.....	5 dos \$7.50, 20¢

**Links, Open.**

Terry's—per gro.....	
Nos.....	1 2 3 4
	\$0.00 8.00 15.00 16.00

**Locks, &c.—**

Eagle, Gaylord Par.....	list March, '84, rev.
ker and Corbin.....	Jan. 1, '85, 55¢25¢
Delta, Nos. 36 to 38.....	40¢
Delta, Nos. 51 to 53.....	40¢10¢
Delta, Nos. 86 to 98.....	30¢
Stoddard Lock Co.....	30¢33 1/2¢
"Champion" Night Latches.....	40¢
Barnes Mfg. Co.....	40¢40¢10¢
Eagle and Corbin Trunk.....	25¢25¢
"Champion" Cab. and Comb.....	33 1/2¢
Yale.....	net price
Romer's.....	25¢
<b>Door Locks, Latches, &amp;c.</b>	
B. & E. Mfg. Co. list Mar. 30,	55¢10¢7¢
1889.....	each
Mallory, Wheeler & Co., list	lowest
July, '88.....	prices
Sargent & Co., list Aug. 1, '88	often
Reading & Wardware Co., list	made,
Feb. 1, '88.....	
Brittan, Graham & Mathes,	list Jan.
1890.....	60¢10¢10¢
Perkins' Burglar Proof.....	60¢25¢
Platts.....	53¢42¢
Barnes Mfg. Co.....	40¢40¢10¢
Yale.....	net price
Delta Fin. & Key Co.....	30¢
L. & C. Round Key Latches.....	30¢10¢
L. & C. Flat Key Latches.....	35¢10¢
Romer's Night Latches.....	15¢
Brooklyn Latches.....	50¢10¢
Shepardson of U. S.....	55¢
Shepardson of U. S.....	55¢



**Mallets.**  
Hickory..... 30¢10¢20¢10¢10¢  
Lignumvite..... 30¢10¢20¢10¢10¢  
R. & L. Block Co., Hickory & L. V.  
80¢10¢10¢

**Mattecks, Regular List.** 60¢10¢10¢10¢5¢

**Measures.**  
Standard Fiberware, No. 1, peck, 7  
dosen, 34; 1/2 peck, \$3.50.

**Meat Cutters.**—See Cutters, Meat.

**Menders, Harness.**  
For dos.....\$2.00

**Mills.**  
Coffee..... 60¢2¢

Box and Side, List Jan. 1, 1888..... 60¢2¢

American, Enterprise Mfg. Co. 30¢10¢30¢

The Swift, Lane Bros..... 30¢10¢

**Mining Knives.**—See Knives, Mining.

**Molasses Gates.**—See Gates, Molasses.

**Money Drawers.**—See Drawers, Money.

**Mowers, Lawn.**  
Pennsylvania New Model, Excelsior,  
Continental, &c..... 60¢60¢5¢

Philadelphia..... 60¢10¢

Perfection..... 60¢10¢

Easy..... 60¢10¢60¢10¢5¢

Bay State..... 60¢10¢60¢10¢5¢

Other Machines..... 60¢10¢5¢70¢

**Muzzles.**  
Safety..... 7 dos, \$3.00, 25¢

**Nails.**  
Cut and Wire. See Trade Report.

Wire Nails, Papered.  
Association List, July 15, '89, 75¢10¢80¢

Tack Mfrs. List..... 70¢70¢10¢

Wire Nails, Standard Penny.  
Card June 1 '89 base.....\$2.10 @ \$2.20

**Horse.**  
Nos. 6 7 8 9 10

Ausable..... 28¢26¢25¢24¢23¢

Clinton, Phila. 19¢17¢16¢15¢14¢..... 30¢

Essex..... 28¢26¢25¢24¢23¢

Lyra..... 19¢17¢16¢15¢14¢..... 30¢

Snowden 19¢17¢16¢15¢14¢..... 30¢

Putnam..... 28¢26¢25¢24¢23¢

Vulcan..... 23¢21¢20¢19¢18¢..... 12¢10¢

Northwest N. 25¢23¢22¢21¢20¢..... 26¢25¢24¢

Globe..... 23¢21¢20¢19¢18¢..... 20¢25¢5¢

Boston..... 23¢21¢20¢19¢18¢..... 20¢25¢5¢

A. C..... 25¢23¢22¢21¢20¢..... 25¢10¢

C. B. K..... 25¢23¢22¢21¢20¢..... 25¢10¢

Maud S..... 25¢23¢22¢21¢20¢..... 40¢10¢

Champlain..... 28¢26¢25¢24¢23¢..... 25¢10¢10¢

Saranac..... 23¢21¢20¢19¢18¢..... 30¢10¢

Champion..... 25¢23¢22¢21¢20¢..... 10¢10¢10¢

Capewell..... 28¢26¢25¢24¢23¢..... 25¢10¢10¢

Star..... 23¢21¢20¢19¢18¢..... 10¢10¢10¢12¢

Anchor..... 23¢21¢20¢19¢18¢..... 40¢10¢

Western..... 23¢21¢20¢19¢18¢..... 40¢10¢

Empire Bronzed..... 14¢

**Picture.**  
Brass Head, Sargent's List..... 50¢10¢10¢

Brass Head, Combination List..... 50¢10¢

Porcelain Head, Sargent's List..... 50¢10¢10¢

Porcelain Head, Combination List..... 40¢10¢

Niles' Patent..... 40¢

**Nail Pullers.**—See Pullers, Nail.

**Nail Sets.**—See Sets, Nail.

**Nut Crackers.**—See Crackers, Nut.

**Nuts.**—List Dec. 18, 1889.

Hot Pressed..... 5.40¢ 6.00¢ off list.

Cold Punched..... 5.40¢ 6.10¢ off list.

In packages of 100 lb, add 1-10¢ lb, net; in packages less than 100 lb, add 1/2¢ lb, net.

**Oakum.**  
Best or Government..... 7¢7 1/4¢

U. S. Navy..... 7¢7 1/4¢

Navy..... 7¢7 1/4¢

**Oilers.**  
Zinc and Tin..... 65¢10¢70¢

Brass and Copper..... 50¢10¢50¢10¢5¢

Malleable, Hammers' Improved, No. 1,  
\$3.00; No. 2, \$4.00; No. 3, \$4.40 7 dos.

10¢10¢10¢

Malleable, Hammers, Old Pattern, same  
list

Prior's Pat. or "Paragon" Zinc..... 40¢

Prior's Pat. or "Paragon" Brass..... 60¢

Olmstead's Tin and Zinc..... 50¢

Olmstead's Brass and Copper..... 50¢

Broughton's Zinc..... 60¢

Broughton's Brass..... 60¢

Sam P. D. & Co..... 7¢10¢

Steel, Draper and Williams..... 50¢

**Openers, Can.**  
Messenger's Comet..... 7 dos \$3.00, 25¢

American..... 7 gross \$3.00

Duplex..... 25¢ 10¢20¢

Lyman's..... 7 dos \$3.75, 20¢

No. 4 French..... 7 dos \$2.50, 50¢60¢

No. 5, Iron Handle..... 7¢10¢, 45¢60¢

Eureka..... 7 dos \$2.50, 10¢

Sardine Scissors..... 7 dos \$2.75, 30¢

Star..... 7 dos \$2.75, 30¢

Sprague, No. 1, \$2.00, 2, \$2.35; 3, \$2.50  
50¢10¢10¢

Excelsior No. 1 \$2.50; No. 2, \$1.50  
World's Best, 7 gross, No. 1, \$12.00  
No. 2, \$24.00; No. 3, \$35.00..... 50¢10¢

Universal, 7 dos \$3.00..... 45¢5¢

Domestic, 7 dos \$2.50..... 45¢

Champion 7 dos \$2.00..... 55¢

**Packing, Steam.**  
Rubber..... 60¢5¢65¢

Standard..... 60¢5¢65¢

Extra..... 60¢5¢65¢

N. Y. B. & P. Co. Standard..... 50¢

N. Y. B. & P. Co. Empire..... 50¢

N. Y. B. & P. Co. Salamander..... 25¢

Jenkins' Standard, 7¢ 80¢, 25¢25¢25¢

**Miscellaneous.**  
American Packing..... 10¢11¢ 7¢

Russia Packing..... 14¢ 7¢

Italian Packing..... 15¢14¢ 7¢

Cotton Packing..... 15¢17¢ 7¢

Jute..... 7¢8¢ 7¢

**Padlocks.**—See Locks.

**Pails.**  
Galvanized Iron—

Quarts 10 12 14

Hill's Light Weight, 7 dos, \$2.75 5.00 3.25

Hill's Heavy Weight, 7 dos, 3.00 3.25 3.75

Helwig's..... 2.50 2.75 3.00

Sidney Shepard & Co..... 3.35 3.85 3.05

Iron Clad..... 2.50 2.75 3.00

Fire Buckets..... 2.75 3.25 3.50

Buckets, see Well Buckets.

**Indurated Fibre Ware.**—35¢

Star Pails, 12 qt..... 7 dos \$5.40

Stable and Milk, 14 qt..... 7 dos \$6.10

Fire Pails, deep..... 7 dos \$5.40

" round bottom..... 7 dos \$7.80

**Standard Fibre Ware.**

Water Pails, 12 qt, per doz..... \$4.00 \$4.50

Dairy Pails, 14 qt, per doz..... 4.50 5.00

Fire Pails, No. 1, 14 qt, per doz..... 4.50 5.00

Fire Pails, No. 2, 14 qt, per doz..... 5.00 5.50

Sugar Pails..... 6.00 6.50

Horse Pails..... 5.00

Buggy Pails..... 4.00

Slop Jars (bal. trap)..... 8.00 9.00

Chamber Pails, 14 qt..... 6.50 7.50

**Pans.**  
Dripping.

Small sizes..... 7¢ 3¢4¢

Large sizes..... 7¢ 3¢4¢

Silver & Co. (Covered)..... 40¢

**Fry.**  
Standard List:

No. 0 1 2 3 4

7 dos, \$3.00 \$3.75 \$4.25 \$4.75 \$5.25

No. 5 6 7 8

7 dos, \$6.00 \$7.00 \$8.00 \$9.00

Polished, regular goods..... 7¢5¢75¢10¢

Acme Fry Pans..... 60¢10¢

**Dust.**  
Steel End, No. 1..... 7 dos \$1.75

**Paper and Cloth.**  
Sand and Emery—

List April 19, 1886..... 50¢50¢10¢

Sibley's Emery and Crocus Cloth..... 30¢

**Parers.**  
Apple.

Advance..... 7 dos \$4.75

Baldwin..... 7 dos 5.25

Bonanza..... each 6.00

Daisy..... 7 dos 4.00

Dandy..... each 7.50

Eclipse..... 7 dos 4.25

Eureka, 1888..... each 16.00

Family Bay State..... 7 dos 12.00

Favorite..... 7 dos 5.00

Gold Medal..... 7 dos 4.00

Ideal..... 7 dos 4.00

Improved Hay State, 7 dos \$7.00 \$8.00

Little Star..... 7 dos 4.50

Monarch..... 7 dos 13.50

New Lightning..... 7 dos 5.50

Oriole..... 7 dos 4.00

Penn..... 7 dos 4.00

Perfection..... 7 dos 4.00

Pomona..... 7 dos 4.00

Rocking Table..... 7 dos 4.00

Turn Table..... 7 dos 4.50

Victor..... 7 dos 18.50

Waverly..... 7 dos 4.00

White Mountain..... 7 dos 4.00

78..... 7 dos 4.25

78..... 7 dos 7.00

White Mountain..... 7 dos \$4.50

Antrim Combination..... 7 dos \$5.50

Hoosier..... 7 dos \$11.50

Saratoga..... 7 dos \$5.50

**Pencils.**  
Faber's Carpenters'..... high list 50¢

Faber's Round Gilt..... 7 gross \$5.25

Dixon's Lead..... 7 gross \$4.50

Dixon's Lumber..... 7 gross \$6.75

Dixon's Carpenters'..... 10¢

**Picks.**  
Railroad or Adse Eye, 5 to 6, \$12.00;  
6 to 7, \$13.00..... 60¢10¢60¢10¢5¢

**Picture Nails.**—See Nails, Picture.

**Pinking Irons.**—See Irons, Pinking.

**Pins.**  
Dow—

Humason, Beckley & Co.'s..... 60¢10¢

Sargent & Co.'s..... \$17 and \$18..... 60¢10¢

Peck, Stow & W. Co..... 50¢10¢50¢10¢5¢

**Curtain.**  
Silvered Glass..... net

White Enamel..... net

Iron, list Nov. 11, 1885, 50¢10¢50¢10¢5¢

Brass..... 60¢60¢5¢

**Pipe, Wrought Iron.**  
List September 18, 1889.

1 1/2 and under, Plain..... 52¢

1 1/2 and under, Galvanized..... 42¢

1 1/2 and over, Plain..... 62¢

1 1/2 and over, Galvanized..... 60¢

Boiler Tubes.  
Sizes up to 2 1/2 in. inclusive..... 55¢

Sizes 3 to 4 in. inclusive..... 60¢

Sizes 7 in. and up..... 55¢

Casing..... 50¢

**Planes and Plane Irons.**  
Wood Planes—

Molding..... 40¢10¢

Bevel, First Quality..... 50¢10¢

Bevel, Second Quality..... 50¢10¢

Bailey's (Stanley R. & L. Co.)..... 40¢10¢

**Miscellaneous Planes.** Stanley R. & L. Co.  
Co. J..... 30¢10¢20¢10¢30¢

Victor Planes (Stanley R. & L. Co.)..... 30¢10¢20¢10¢30¢

Steer's Iron Planes..... 35¢35¢10¢

Nerfien Mal Iron Co.'s..... 40¢40¢10¢

Davis' Iron Planes..... 40¢40¢10¢

Birmingham Plane Co..... 50¢50¢10¢

Gage Tool Co.'s Self-Setting..... 30¢10¢10¢

Chaplin's Iron Planes..... 40¢40¢10¢

Sargent's..... 30¢10¢30¢10¢10¢

Standard Tool Co..... 50¢50¢10¢

**Plane Irons.**  
Butcher's..... \$5.00 @ \$5.25 to 2

Ruck Bros..... 30¢

Obdu "Thistle"..... 30¢10¢

Sandusky..... 30¢10¢

S. & I. J. White..... 25¢

**Plates.**  
Fellows..... 7¢ 6¢60¢

**Pliers and Nippers.**  
Button's Patent..... 50¢50¢10¢

Hall's No. 2, 5 in., \$13.50; No. 4, 7 in.,  
\$21.00 7 dos..... 30¢10¢35¢

Humason & Beckley Mfg. Co. 50¢50¢10¢

Lindsay's Giant..... 40¢

Gas Pliers..... 60¢

Gas Pliers, Custar's Nickel Plated..... 60¢5¢</





**Finware—**  
Stamped, Japanned and Ploiced, list  
Jan. 30 1887.....70¢10¢70¢10¢55

**Tire Benders, Upsetters, &c—**  
See Benders and Upsetters, Tire.

### Tools.

**Coopers—**  
Bradley's.....20¢  
Barton's.....30¢20¢55  
L. & J. White.....20¢55  
Albertson Mfg. Co.....25¢  
Beatty's.....30¢  
Sandusky Tool Co.....30¢30¢55  
Shaves, Cincinnati Tool Co.....30¢

### Lumber.

Ring Peavies, "Blue Line".....\$ dos \$20.00  
Ring Peavies, Common.....\$ dos \$18.00  
Steel Socket Peavies.....\$ dos \$18.00  
Mail Iron Socket Peavies.....\$ dos \$19.00  
Cant Hooks, "Blue Line".....\$ dos \$16.00  
Cant Hooks, Common Finish.....\$ dos \$14.00  
Cant Hooks, Mail, Socket Clasp, "Blue  
Line" Finish.....\$ dos \$14.00  
Cant Hooks, Mail, Socket Clasp, Com-  
mon Finish.....\$ dos \$14.50  
Cant Hooks, Clip Clasp, "Blue Line"  
Finish.....\$ dos \$14.00  
Cant Hooks, Clip Clasp, Common Fin-  
ish.....\$ dos \$12.00  
Hand Spikes.....\$ dos 6 ft., \$15.00; 8 ft.,  
\$20.00  
Pike Poles, Pike & Hook, \$ dos, 12 ft.,  
\$11.50; 14 ft., \$12.50; 16 ft., \$14.50;  
18 ft., \$17.50; 20 ft., \$21.50  
Pike Poles, Pike only, \$ dos, 12 ft.,  
\$10.00; 14 ft., \$11.00; 16 ft., \$13.00; 18  
ft., \$16.00; 20 ft., \$20.00  
Pike Poles, not ironed, \$ dos, 12 ft.,  
\$6.00; 14 ft., \$7.00; 16 ft., \$9.00; 18  
ft., \$12.00; 20 ft., \$16.00  
Setting Poles, \$ dos, 12 ft., \$14.00; 14  
ft., \$15.00; 16 ft., \$17.00  
Swamp Hooks.....\$ dos \$13.00

**Saw.**  
Atkins' Perfection.....\$ dos \$12.00  
Atkins' Excelsior.....\$ dos \$6.00  
Atkins' Giant.....\$ dos \$4.00

**Tobacco Cutters—See Cutters, To-  
bacco.**

**Transom Lifters—See Lifters,  
Transom.**

### Traps—

**Game—**  
Newhouse.....40¢40¢55  
Onida Pattern.....70¢10¢55  
Game, Blake's Patent.....40¢10¢55  
**Mouse and Rat—**  
Mouse Wood Choker, \$ dos holes, 11¢13¢  
Mouse, Round Wire.....\$ dos \$1.50, 10¢  
Mouse, Cage, Wire.....\$ dos \$2.50, 10¢  
Mouse, Catch-em-alive.....\$ dos \$2.50 15¢  
Mouse, Bonanza.....\$ dos \$0.90¢11.00  
Rat, Decoy.....\$ gr \$10.00, 10¢  
Ideal.....\$ gr \$10.00  
Cyclone.....\$ gr \$5.25  
Hotchkiss Metallic Mouse, 5-hole traps,  
\$ dos, 90¢; in full cases, \$ dos.....75¢  
Hotchkiss Imp. Rat Killer.....\$ gr \$18.50  
Hotchkiss New Rat Killer.....\$ gr \$16.50  
Schuyler's Rat Killer.....\$ gr \$15.00

### Triers—

Butter and cheese.....25¢  
**Trimmers, Spoke.**  
Bonney's.....\$ dos \$10.00, 50¢  
Sears's.....\$ dos \$10.00, 50¢  
Ives', No. 1, \$15.00; No. 2, \$12.00; \$ dos.  
55¢10¢  
Douglas.....\$ dos \$9.00, 20¢  
Cincinnati.....25¢

### Trowels—

Lothrop's Brick and Plastering.....20¢10¢55  
Reed's Brick and Plastering.....25¢  
Dinaston's Br'k and Plastering.....25¢  
Peace's Plastering.....25¢  
Clement & Maynard's.....25¢  
Rose's Brick.....16¢20¢  
Brade's Brick.....25¢  
Worral's Brick and Plastering.....20¢  
Gordon.....70¢

### Trucks, Warehouse, &c—

B. & L. Block Co.'s list, '82.....40¢

### Tubes, Boiler—

#### See Pipe.

### Twine—

Flat Twine— BC. B.  
No. 9, 1/4 and 1/2 Balls.....25¢ 31¢  
No. 12, 1/4 and 1/2 Balls.....22¢ 30¢  
No. 18, 1/4 and 1/2 Balls.....20¢ 29¢  
No. 24, 1/4 and 1/2 Balls.....20¢ 29¢  
No. 36, 1/4 and 1/2 Balls.....18¢ 28¢  
No. 24, Matras, 1/4 and 1/2 Balls.....25¢  
Chalk Line, Cotton, 1/4 and 1/2 Balls.....25¢  
Mason Line, Linen, 1/4 and 1/2 Balls.....55¢  
2-Ply Hemp, 1/4 and 1/2 Balls (Spring  
Twine).....15¢40¢  
3-Ply Hemp, 1/4 and 1/2 Balls.....18¢10¢40¢  
Cotton Wrapping, 5 Balls to 5.....15¢10¢  
2, 3, 4 and 5-Ply Jute, 1/4 and 1/2 Balls.....10¢  
Wool.....61¢64¢  
Paper.....13¢14¢  
Cotton Mops, 6, 9, 12 and 15 ft. to dos.....15¢

### Vices—

Solid Box.....50¢10¢50¢10¢55  
**Parallels**  
Fisher & Norris Double Setew.....15¢10¢  
Stephens'.....25¢30¢  
Parker's.....20¢35¢  
Wilson's.....55¢  
Howard's.....40¢  
Bonney's.....40¢10¢  
Mills' Falls.....40¢40¢10¢  
Trenton.....40¢40¢10¢  
Merrill's.....15¢30¢  
Sargent's.....60¢10¢10¢  
Backus and Union.....40¢  
Double Screw Leg.....15¢10¢  
Frontis.....30¢25¢  
Simpson's Adjustable.....40¢  
Moore's.....30¢  
Massey Quick Action.....20¢25¢

### Saw Files—

Bonney's, Nos. 2 & 3, \$15.00.....40¢10¢  
Sears's.....35¢40¢10¢35¢  
Stern's Silent Saw Vices.....35¢40¢10¢  
Sargent's.....60¢40¢10¢  
Hopkins.....\$ dos \$17.50, 10¢  
Reading.....40¢10¢  
Wentworth.....20¢10¢

### Miscellaneous.

Combination Hand Vices.....\$ gr \$48.00  
Cowell Hand Vices.....30¢  
Bauer's Pipe Vices.....10¢  
Cincinnati.....25¢10¢  
Enterprise Pipe Vices, each.....\$3.00  
Massey Combination Pipe.....40¢

### Wade—Price per M.

J.M.C. & W.R.A.—B.E., 11 up.....65¢  
J.M.C. & W.R.A.—B.E., 9 to 10.....85¢  
J.M.C. & W.R.A.—B.E., 8.....95¢  
J.M.C. & W.R.A.—B.E., 7.....11¢  
J.M.C. & W.R.A.—P.E., 11 up.....1.15  
J.M.C. & W.R.A.—P.E., 9 to 10.....1.50  
J.M.C. & W.R.A.—P.E., 8.....1.70  
J.M.C. & W.R.A.—P.E., 7.....1.80  
Slay's B.E., 11 up.....\$1.70¢1.75  
Slay's P.E., 11 up.....3.00¢3.25

### Wagon Boxes—See Boxes, Wagon.

### Washer Cutters—See Cutters, Washer.

### Wagon Jacks—See Jacks, Wagon.

### Ware, Hollow, Enameled, &c.

#### Cast Iron, Hollow—

Stove Hollow-Ware.....60¢10¢  
Ground.....60¢10¢  
Unground.....60¢10¢10¢  
White Enameled-Ware.....70¢10¢70¢10¢55  
Boilers and Saucepans.....60¢10¢40¢  
Tinned Boilers and Spans.....60¢10¢60¢  
Rustless Hollow-Ware.....60¢50¢55¢  
Gray Enameled-Ware.....50¢  
Stove.....50¢  
Maslin Kettles.....60¢10¢10¢  
Boilers and Saucepans.....40¢55¢

#### Enameled—

Agate and Granite Ware, list Jan. 1,  
1889.....33¢10¢  
Ironclad Enameled Ware.....dis 33¢10¢

#### Kettles—

Galvanized Tea-Kettles—

Inch.....6 7 8 9  
Each.....55¢ 60¢ 75¢

#### Standard Fiber—

Per Dozen.

Plain, Dec'd.....\$2.00 \$2.25

Wash-Basins, 10 1/2 in.....2.25 2.75

Wash-Basins, 12 in.....2.25 2.75

Keelers, 11 1/2 in.....4.00 4.50

Cupholders.....4.00 4.50

Spittoons, "Daisy," 8 in.....4.00 4.50

Peck Measure.....4.00 4.50

Half-Peck Measure.....3.50

See also Falls.

#### Indurated Fiber—25¢

Spittoons, No. 2, \$ dos.....\$8.40

Basins, Ringed, \$ dos, No. 2.....\$5.00

Washbuds, Nested, Nos. 0, 1, 2 and 3 (4  
pieces), \$ nest.....\$7.50

Keelers, Nested, Nos. 1, 2, 3 and 4 (4  
pieces), \$ nest.....\$2.90

Butter Bowls 15, 17 and 19-inch (3  
pieces), \$ nest.....\$1.70

Liquid Measures, pt., qt., 2 qt. and fun-  
nel (4 pieces) \$ set.....\$1.60

See also Falls.

#### Silver Plated, Hollow—

4 mo. or 5 ¢ cash in 30 days.

Reed & Barton.....40¢55¢

Meriden Britannia Co.....40¢55¢

Simpson, Hall, Miller & Co.....40¢55¢

Rogers & Brother.....40¢55¢

Hartford Silver Plate Co.....40¢55¢

William Rogers Mfg. Co.....40¢55¢

### Washers—

Size hole.....5-16 1/4 1/2 3/4 1 1 1/2

Washers.....6 5 5.50¢ 3

In lots less than 200 b., \$ b., add 1/4¢, 5-b  
boxes 1¢ to list.

### Wedges—

Iron.....\$ b 31¢

Steel.....\$ b 34¢

### Weights, Bash—

Solid Eyes.....\$ ton \$18¢\$19

### Well Buckets, Galvanized—See Buckets, Well, Galvanized.

### Wheels, Well.

8 in., \$3.25; 10 in., \$3.70; 12 in., \$3.95

### Wire and Wire Goods—

#### Iron—

Market.

Br. & Ann'd, Nos. 0 to 13.....77¢1/2

Cop'd, Nos. 0 to 13.....75¢

Galv., Nos. 0 to 13.....67¢1/2

Tin'd, Tinned list Nos. 0 to 13.....67¢1/2

### Stones.

Br. & Ann'd, Nos. 10 to 13.....77¢1/2

Br. & Ann'd, Nos. 19 to 26.....80¢

Br. & Ann'd, Nos. 27 to 30.....82¢1/2

Tinned.....55¢

Tinned Broom Wire, 18 to 21, \$ b.....55¢

Galvanized Fence, Nos. 8 and 9.....70¢

Brass, list Jan. 18, 1884.....35¢

Copper, list Jan. 18, 1884.....35¢

Annealed Wire on Spools.....55¢

Mailin's Steel and Tin'd on Spools.....55¢

Mailin's Brass and Cop. on Spools.....45¢

Tate's Spooled, Tinned and Annealed.....55¢

Tate's Spooled Cop. and Brass.....45¢

Cast Steel Wire.....60¢

Stubs' Steel Wire.....60¢ to 70¢

Steel Music Wire, 12 to 30.....60¢ to 70¢

Wire Clothes Lines, see Lines.

Wire Picture Cord, see cord.

### Bright Wire Goods—

Standard list.....80¢10

### Wire Cloth and Netting.

Painted Screen Cloth, good quality  
100 sq. ft., \$1.40

Galvanized Wire Netting.....70¢10¢75¢

### Wire, Barb.

F.o.b. cars Pittsburgh and Cleveland,  
\$2.75 ¢ cwt. for Painted, \$1.25 for  
Galvanized.

5¢ ¢ cwt. advance on above f.o.b. cars  
Cincinnati and Allentown, Pa.

10¢ ¢ cwt. advance for f.o.b. cars Joliet  
and Chicago.

15¢ ¢ cwt. advance for f.o.b. cars St.  
Louis.

35¢ ¢ cwt. advance for f.o.b. cars  
Omaha.

55¢ ¢ cwt. advance for f.o.b. cars Law-  
rence, Kan.

\$1.25 ¢ cwt. advance for f.o.b. cars San  
Francisco.

### Wire Rope—See Rope, Wire.

### Wrenches—

American Adjustable.....40¢

Baxter's Adjustable "B".....40¢10¢50¢

Baxter's Diagonal.....40¢10¢50¢

Coe's Genuine.....50¢25¢

Coe's "Mechanics".....50¢10¢25¢

Girard Standard.....55¢10¢

Lamson & Sessions' Engineers'.....60¢10¢

Lamson & Sessions' Standard.....70¢10¢

P. S. & W. Agricultural.....75¢10¢75¢

Girard Agricultural.....10¢45¢

Lamson & Sessions' Agric'l.....10¢45¢

Bemis & Call's

Pat. Combination.....35¢

Merrick's Pattern.....35¢

Cylinder or Gas Pipe.....40¢55¢

No. 3 Pipe.....40¢55¢

Alken's Pocket (Bright).....\$0.00, 50¢10¢

The Favorite Pocket.....\$ dos \$4.00, 40¢

Webster's Pat. Combination.....25¢

Boardman's.....30¢10¢

Always Ready.....25¢25¢

Aligator.....50¢

Donohue's Engineer.....50¢10¢

Acme, Bright.....50¢25¢

Acme, Nickel.....40¢25¢

Hercules.....70¢

Walker's.....55¢25¢

Diamond Steel.....55¢25¢

Cincinnati Brace Wrenches.....55¢10¢

Tate's Vise Wrench.....55¢10¢25¢

### Wringers, Clothes—

Am Wringer Co.'s list, July 15, 91, 25¢ cash

Colby Wringer Co., list Sept. 1, '91, 25¢ cash

### Wrought Goods—

Staples, Hooks, &c., list Jan. 13, 1886,  
85¢85¢165¢

## PAINTS, OILS AND COLORS.—Wholesale Prices.

### Animal and Vegetable Oils.

Lined, City, raw, per gal. 40 ¢ ..  
Lined, City, boiled.....48 ¢ ..  
Lined, Western, raw.....37 ¢ 58  
Lard, City, Extra Winter.....57 ¢ ..  
Lard, City, Prime.....43 ¢ 45  
Lard, City, Extra No. 1.....37 ¢ 40  
Lard, City, No. 1.....37 ¢ 40  
Lard, Western, prime.....53 ¢ 54  
Cotton-seed, Crude, prime..... ¢ 30  
Cotton-seed, Crude, off  
grades.....25 ¢ 28  
Cotton-seed, Summer Yel-  
low, prime.....36 ¢ 38  
Cotton-seed, Summer Yel-  
low, off grades.....81 ¢ 84  
Sperm, Crude.....68 ¢ 70  
Sperm, Natural Spring..... ¢ ..  
Sperm, Bleached Spring..... ¢ 75  
Sperm, Natural Winter.....73 ¢ 80  
Sperm, Bleached Winter.....73 ¢ 80  
Whale, Crude.....54 ¢ 55  
Whale, Natural Winter.....54 ¢ 55  
Whale, Bleached Winter.....56 ¢ 58  
Whale, Extra Bleached.....58 ¢ 60  
Sea Elephant, Bleached  
Winter.....63 ¢ 64  
Menhaden, Crude, Sound..... ¢ 30  
Menhaden, Crude, Southern..... ¢ 32  
Menhaden, Light Pressed..... ¢ 32  
Menhaden, Bleached Water.....33 ¢ 34  
Menhaden, Extra Bleached.....35 ¢ 36  
Tallow, City, prime..... ¢ 48  
Tallow, Western, prime..... ¢ ..  
Cocoanut, Ceylon.....64 ¢ 65  
Cocoanut, Java.....64 ¢ 65  
Cod, Domestic.....32 ¢ 33  
Cod, Foreign..... ¢ ..  
Red Elaine.....36 ¢ 38  
Red Saponified..... ¢ 5 5 1/2  
Bank..... ¢ 32  
Strait..... ¢ 33  
Olive, Italian, bbls..... ¢ 68  
Kestfoot, prime.....65 ¢ 68  
Palm, prime, Lagos..... ¢ 6 6 1/2

### Mineral Oils.

Black, 20 gravity, 25 ¢ 30  
cold test..... per gal 74 ¢ 8  
Black, 20 gravity, 15 cold  
test.....84 ¢ 9  
Black, 20 gravity, summer  
test.....64 ¢ 7  
Cylinder light, filtered.....15 ¢ 20

Cylinder, dark, filtered.....12 ¢ 15  
Cylinder, dark, s'm refined  
10 ¢ 12  
Paraffine, 32 1/2 gravity.....13 ¢ 14  
Paraffine, 35 gravity.....12 ¢ 13  
Paraffine, 38 gravity.....9 ¢ 10  
Paraffine, red, 21 ¢ 22 grty..... ¢ ..  
Paraffine, red, 22 1/2 grty.....15 ¢ 14

### Paints and Colors.

Barytes, Foreign, \$ ton, \$23.00.....\$24.00  
Barytes, Amer. floated.....\$20.00  
Barytes, Amer. No. 1.....19.00.....\$20.00  
Barytes, Amer. No. 2.....13.00.....\$16.00  
Barytes, Amer. No. 3.....11.00.....\$12.00  
Blue, Celestial..... ¢ 6 8  
Blue, Chinese.....50 ¢ 55  
Blue, Prussian.....25 ¢ 40  
Blue, Ultramarine..... ¢ 25  
Brown, Spanish.....1/4 ¢ 1  
Brown, Vandyke, Amer..... ¢ 3 3 1/2  
Brown, Vandyke, English..... ¢ 8  
Carmine, No. 40, in bulk, 3.10 ¢ ..  
Carmine, No. 40, in boxes  
or barrels.....3.30 ¢ ..  
Carmine, No. 40, in ounce  
bottles.....1.20 ¢ ..  
Chalk, in bulk..... ¢ ton.....2.00  
Chalk, in bbls., \$ 100 b. \$3 ¢ 40  
China Clay, English..... ¢ ton.....13.00  
Cobalt Oxide, prep'd.....2.90 ¢ ..  
Cobalt Oxide, lots 100.....2.00 ¢ ..  
Cobalt, Oxide, black..... ¢ ton.....13.00  
Green, Paris, in bulk.....14 ¢ 15 1/2  
Green Paris, 170 ¢ 175 ¢ ..  
Kegs.....14 ¢ 15 1/2  
Green, Paris, small pack.....16 ¢ 11 1/2  
Green, Chrome, ordinary..... ¢ 8  
Green, Chrome, pure.....22 ¢ 25  
Lead, Eng., R.R. white.....84 ¢ 10  
Lead, Ann. White, dry or in oil:  
Kegs, lots less than 500 b..... ¢ 7 1/2  
Kegs, lots 500 b to 5 tons..... ¢ 7  
Kegs, lots 5 tons to 12 tons..... ¢ 6 1/2  
Green, Chrome, ordinary..... ¢ 8  
Lead White in oil 25 ¢ b  
pails add to keg price..... ¢ 1/2  
Lead, White, in oil, 12 1/2 ¢ the  
pails, add to keg price..... ¢ 1

Lead, White, in oil, 1 to 5 ¢ as-  
sorted tin, add to keg price..... ¢ 2 1/2  
Lead, red, bbls. and 1/2 bbls..... ¢ 6 1/2  
Lead, red, kegs..... ¢ 6 1/2  
Litharge, kegs..... ¢ 6 1/2  
Litharge, bbls. and 1/2 bbls..... ¢ 6 1/2  
TERMS.—Lead and Litharge

# CURRENT METAL PRICES.

SEPTEMBER 30, 1891.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market reports.

## IRON AND STEEL.

### Bar Iron from Store.

Common Iron:	
1 to 2 in. round and square...	2.00 @ 2.10
1 to 6 in. x 1/2 to 1 in. ....	2.10 @ 2.30
Refined Iron:	
1 to 2 in. round and square...	2.10 @ 2.30
1 to 4 in. x 1/2 to 1 1/2 in. ....	2.10 @ 2.30
4 1/2 to 6 in. x 1/2 to 1 in. ....	2.10 @ 2.30
1 to 6 in. x 1/2 and 5-16 .....	2.30 @ 2.50
Rods—1/2 and 1-16 round and sq. ...	2.20 @ 2.40
Bands—1 to 6 x 3-16 to No. 12 ...	2.40 @ 2.60
"Burden Best" Iron, base price...	3.00
Burden's "H. B. & S." Iron, base price...	2.80
"Ulster" .....	3.00
Norway Bars .....	4.00
Norway Shapes .....	5.00

### Merchant Steel from Store.

Open-Hearth and Bessemer Machinery, Toe Calk, Tire and Sleigh Shoe, base price in small lots .....	2 3/4
Best Cast Steel, base price in small lots .....	8
Best Cast Steel Machinery, base price in small lots .....	5

### Sheet Iron from Store.

	Common American.	R. G.	Cleaned.
10 to 16 .....	2.00 @ 3.00	3.35	3.75
17 to 20 .....	3.15 @ 3.25	3.35	3.75
21 to 24 .....	3.35 @ 3.35	3.60	4.00
25 and 26 .....	3.35 @ 3.35	3.85	4.20
27 .....	3.50 @ 3.62	3.85	4.20
28 .....	3.65 @ 3.65	4.10	4.20
Galv'd, 14 to 20 .....	4.75 @ 4.80	5.00	5.20
Galv'd, 21 to 24 .....	5.12 @ 5.12	5.35	5.50
Galv'd, 25 to 26 .....	5.50 @ 5.50	5.70	5.85
Galv'd, 27 .....	5.50 @ 5.50	5.70	5.85
Galv'd, 28 .....	5.65 @ 5.65	6.10	6.25
Patent Planchet .....	10	10	10
Russia .....	10	10	10
American Cold Rolled B. B. ....	5	5	5
Craig Polished Sheet Steel .....	8 1/2	8 1/2	8 1/2

### English Steel from Store.

Best Cast .....	15
Extra Cast .....	16 1/2
Swaged Cast .....	16
Best Double Shear .....	15
Blister, 1st quality .....	12
German Steel, Best .....	10
2d quality .....	9
3d quality .....	8
Sheet Cast Steel, 1st quality .....	15
2d quality .....	14
3d quality .....	12 1/2
R. Mushet's "Special" .....	48
"Titanic" .....	20

## METALS.

### Tin.

Banca, Pigs .....	22 1/2
Straits, Pigs .....	22
Straits in Bars .....	24

### Tin Plates.

	Charcoal Plates.—Bright.	Per box.
Meiyn Grade .....	10 x 14 .....	6.75
" .....	12 x 12 .....	7.00
" .....	14 x 20 .....	6.75
" .....	16 x 28 .....	13.70
" .....	18 x 14 .....	8.25
" .....	18 x 12 .....	8.50
" .....	18 x 20 .....	8.25
" .....	18 x 28 .....	16.50
" .....	DC, 12 1/2 x 17 .....	6.25
" .....	DX, 12 1/2 x 17 .....	7.75
Calland Grade .....	10 x 14 .....	6.70
" .....	12 x 12 .....	6.95
" .....	14 x 20 .....	6.90
" .....	18 x 14 .....	7.85
" .....	18 x 12 .....	8.20
" .....	18 x 20 .....	7.85
Allaway Grade .....	10 x 14 .....	6.35
" .....	12 x 12 .....	6.50
" .....	14 x 20 .....	6.35
" .....	16 x 28 .....	12.40
" .....	18 x 14 .....	7.50
" .....	18 x 12 .....	7.80
" .....	18 x 20 .....	7.50
" .....	18 x 28 .....	15.00
" .....	DC, 12 1/2 x 17 .....	6.80
" .....	DX, 12 1/2 x 17 .....	6.00

### Coke Plates.—Bright.

Steel Coke.—IC, 10 x 14, 14 x 20 .....	5.70
10 x 20 .....	8.10
20 x 28 .....	11.70
IX, 10 x 14, 14 x 20 .....	6.80
BV Grade.—IC, 10 x 14, 14 x 20 .....	5.70

### Charcoal Plates.—Terne.

Dean Grade.—IC, 14 x 20 .....	5.60
20 x 28 .....	10.75
IX, 14 x 20 .....	6.80
20 x 28 .....	12.50
Abecarne Grade.—IC, 14 x 20 .....	5.40
20 x 28 .....	10.75
IX, 14 x 20 .....	6.35
20 x 28 .....	12.35

## Tin Boiler Plates.

IX, 14 x 26 .....	112 sheets .....	\$13.50
IX, 14 x 28 .....	112 sheets .....	13.75
IX, 14 x 31 .....	112 sheets .....	15.25

## Copper.

Duty: Pig, Bar and Ingot, 1 1/4¢; Old Copper, 1¢  
 Manufactured (including all articles of which Copper is a component of chief value), 35¢ ad valorem.

## Ingot

Lake .....	13
Ansonia Grade Arizona .....	12 1/2
Ansonia Grade Casting .....	12

## Sheet and Bolt.

	Not wider than	Not longer than	And longer than	Over 1/4 in.	Over 1/2 in.	Over 3/4 in.	Over 1 in.	Over 1 1/4 in.	Over 1 1/2 in.	Over 1 3/4 in.	Over 2 in.	Over 2 1/4 in.	Over 2 1/2 in.	Over 2 3/4 in.	Over 3 in.	Over 3 1/4 in.	Over 3 1/2 in.	Over 3 3/4 in.	Over 4 in.
30 .....	72	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
32 .....	72	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
34 .....	96	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
36 .....	96	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
38 .....	96	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
40 .....	96	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
42 .....	96	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
44 .....	96	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
46 .....	96	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
48 .....	96	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
50 .....	96	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
52 .....	96	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
54 .....	96	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
56 .....	96	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
58 .....	96	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
60 .....	96	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
62 .....	96	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
64 .....	96	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
66 .....	96	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
68 .....	96	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
70 .....	96	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
72 .....	96	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
74 .....	96	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
76 .....	96	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
78 .....	96	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
80 .....	96	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
82 .....	96	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
84 .....	96	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
86 .....	96	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
88 .....	96	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
90 .....	96	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
92 .....	96	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
94 .....	96	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
96 .....	96	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
98 .....	96	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
100 .....	96	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18

All Bath Tub Sheets.... 16 oz. 14 oz. 12 oz. 10 oz.  
 Per pound..... \$0.23 0.25 0.27 0.31  
 Bolt Copper, 1/4 inch diameter and over, per pound..... 18¢  
 Circles, 60 inches in diameter and less, 3 cents per pound advance over lowest prices of Sheet Copper of the same thickness.

## Copper Bottoms, Pits and Flats.

14 ounce to square foot and heavier..... 23¢  
 12 ounce and up to 14 ounce to square foot..... 23¢  
 10 ounce and up to 12 ounce..... 25¢  
 Lighter than 10 ounce..... 28¢  
 Circles less than 8 inches diameter 2 cents per pound additional.  
 Circles over 8 inches diameter are not classed as Copper Bottoms.

## Tinning.

Tinning sheets on one side, 10, 12 and 14 x 48 each..... 8¢  
 Tinning sheets on one side, 30 x 60 each..... 30¢  
 For tinning boiler sizes, 9 in. (sheets 14 in. x 60 in.), each..... 15¢  
 For tinning boiler sizes, 8 in. (sheets 14 in. x 56 in.), each..... 12¢  
 For tinning boiler sizes, 7 in. (sheets 14 in. x 52 in.), each..... 12¢  
 Tinning sheets on one side, other sizes, per square foot..... 23¢  
 For tinning both sides double the above prices.

## Planchet Brass and Copper.

Not larger than 30 x 60.

16 oz. and heavier .....	46
14 oz. ....	25
12 oz. ....	27

## Seamless Brass and Copper Tubes.

Sept. 16, 1891.

O. G.	N. G.	1/2	3/4	1	1 1/4	1 1/2	1 3/4	2	2 1/4	2 1/2	2 3/4	3	3 1/4	3 1/2	3 3/4	4	4 1/4	4 1/2	4 3/4	5
8-14	6-12	25	31	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12
15	13	26	31	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13
16	14	27	32	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14
17	15	28	33	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15
18	16	29	34	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
19	17	30	35	33	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17
20	18	31	36	34	33	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18